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THE PHILOSOPHICAL REVIEW

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OF THE SAGE SCHOOL OF PHILOSOPHY, CORNELL UNIVERSITY

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September, 1932

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THE

PHILOSOPHICAL REVIEW

ERNST TROELTSCH'S PHILOSOPHY OF HISTORY

ERNST TROELTSCH was one of the few thinkers of the twentieth century who grappled with the problems of the philosophy of history. We have not been lacking in philosophies of art, of religion, of science, of education, nor in philosophical treatments of political and economic life, but significant treatments of the philosophy of history appear to have been few. Perhaps the meagerness of the work in this field is one of the reasons why, when a philosophy of history on a grand scale does appear—like that of Karl Marx in the last century, or that of Spengler in the present one—it gains such a hold on the minds of men.

Troeltsch was well qualified by nature and education for the excessively difficult task which the philosophy of history presents. He had, as he has told us, "a predominantly humanistic and historical education".[1] At Göttingen, the place of his chief university study, he was gripped by Wellhausen, and from the philologist and religious historian Paul de Lagardes, to whom he dedicated the second volume of his collected works, he received an almost overpowering impression. At the same time he was responsive to the currents of thought from the physical sciences. His father was a physician in Augsburg, Bavaria—where Troeltsch was born in 1865—and the home was full of the objects and books of natural science. Darwinism was becoming popular as a philosophy, and the addresses of Dubois-Reymond and similar exponents of scientific thought were much discussed in his boyhood. Hence all his problems concerning the philosophy of history and of civilization were seen in the framework of the natural-

[1] *Christian Thought*, p. 5.

science picture of the world. This appropriation of the results of the natural sciences, and the active pursuit of researches in the history of religious thought and institutions that followed his university study, produced a tension in Troeltsch's mind, which corresponded, as he felt, to the tension in the spiritual life of his time. From this tension sprang the initial problem of his philosophy of history.

But there were other sides of Troeltsch's nature and development which added to his equipment for what he came to regard as his supreme task—the philosophy of history. In the lecture which he prepared for delivery at the University of Oxford in 1923, but which he did not live to deliver, he stresses his lifelong interest in history, and then adds: "I was, however, inspired by another interest, which was quite as strong and quite as much a part of my natural endowment as the first, I mean the interest in reaching a vital and effective religious position, which could alone furnish my life with a center of reference for all practical questions, and could alone give meaning and purpose to reflection upon the things of this world. This need of mine led me to theology and philosophy, which I devoured with an equally passionate interest." [2]

In his biographical section in *Die Philosophie der Gegenwart* Troeltsch says that the condition of philosophy when he entered the university was not enticing, and that he chose theology because at that time it afforded about the only access to metaphysics and also offered most stimulating historical problems. His teacher in theology was Albrecht Ritschl, whom he describes as a keen logician, a highly systematic thinker, and an original personality cut out according to a large pattern. He was also much stimulated by the leading historian of the Ritschlian school, Adolf Harnack. But, while participating for a brief time in the Ritschlian movement, he soon began to separate himself from it. He felt that Ritschl too easily separated the beginnings of Christianity from contemporary religions. He also felt that Ritschl modernized Luther too freely and at the same time conceived the modern world in a too naïve and simple fashion. Thus a synthesis was made between essential Christianity, the spirit of Luther, and the needs

[2] *Op. cit.*, p. 5.

of modern life which Troeltsch believed historical study would not sustain. It was a natural consequence of this reaction from the then dominant trend in theology that he soon became the recognized theologian of the movement which succeeded the Ritschlian school, namely, the *religionsgeschichtliche Schule*.

While Troeltsch stood for a more far-reaching influence of history on theology than had previously been effected, he also felt an urge towards metaphysics which Ritschl, with his watchword "keine Metaphysik in der Theologie", could not satisfy. Moreover, the metaphysical and the religious were for him closely bound up together. The strongest influence on his mind from the side of philosophy came from Lotze, although before Troeltsch became a student at Göttingen Lotze had gone to Berlin. The effect of this influence appears in the fact that for him ethical theism, rather than justification by faith, is the heart of religion. This ethical theism, however, is with Troeltsch no mere piece of abstract intellectualism, but a central strand in the complex of the life of the church and of western civilization in its spiritual aspects, and also central in his own personal motivation.

Thus Troeltsch was responsive to the outreachings towards metaphysics which followed upon the sway of Neokantianism, positivism, and empiricism. But this interest of his, as it developed alongside of his historical thought, brought about again a tension in his mind. "I soon discovered", he wrote, "that the historical studies which had so largely formed me, and the theology and philosophy in which I was now immersed, stood in sharp opposition, indeed even in conflict, with one another. I was confronted, upon the one hand, with the perpetual flux of the historian's data, and the distrustful attitude of the historical critic towards conventional traditions, the real events of the past being, in his view, discoverable only as a reward of ceaseless toil, and then only with approximate accuracy. And, upon the other hand, I perceived the impulse in men towards a definite practical standpoint—the eagerness of the trusting soul to receive the divine revelation and to obey the divine commands. It was largely out of this conflict, which was no hypothetical one, but a fact of my own practical experience, that my entire theoretical standpoint took its rise." [3]

[3] *Op. cit.*, p. 6.

Here again emerges one of the chief problems of Troeltsch's philosophy of history—the problem of historical relativism and man's metaphysical and practical needs. For he felt that this problem was not a mere accident of his personal experience. "It was rather", he said, "the personal form in which a vital problem characteristic of the present stage of human development presented itself to me."

A further qualification of Troeltsch for the task of the philosophy of history was his own extensive researches in various historical fields. Of these the two most important were his great monograph on the history of Protestantism, in *Die Kultur der Gegenwart* (I. Teil, IV, 1, "Protestantisches Christentum und Kirche in der Neuzeit") and his *Soziallehren der Christlichen Kirchen und Gruppen,* which is the only one of the volumes in his *Gesammelte Schriften* that is not a compilation of articles prepared for the learned magazines.

Both of these researches influenced his philosophy of history in significant ways. The former was the result of his discovery of the extent to which medieval thought persisted in the Reformers, and it led to his dating of the beginning of the modern period from the Enlightenment. This view he presented again in his volume on the philosophy of history. "One must distinguish", he wrote, "between the modern period in a wider and a narrower sense of the term. In the former sense it begins with the fifteenth century and the sovereignty of the military and official State as over against the Church and the Empire; in the latter sense it begins with the English Revolution and the Enlightenment."[4] The Enlightenment, he held, is the beginning of the fully modern period because through it is first established an autonomous secular culture in contrast to one that is theologically based and controlled.

The *Soziallehren,* a thick volume of almost a thousand pages and Troeltsch's masterpiece, constituted an historical achievement which furnished a most substantial basis for the treatment of the philosophy of history. The result of this work, in general, was to show how Christianity through the centuries has been sociologically conditioned and at the same time to show how it has been an active, determining principle in the sociological field. The

[4] *Der Historismus und seine Probleme,* p. 763.

most notable instance of this latter result is where Troeltsch joins Max Weber in setting forth Calvinism as the indispensable basis of capitalism.[5] It is with this piece of research as a background that he discusses another of his problems in the philosophy of history—the relation between the sociological and the ideological interpretation of historic events.

Finally, Troeltsch had the equipment, so unusual for a German philosopher, of active and extended participation in political life. During his twenty-one years as professor of systematic theology at Heidelberg, for five of which he was also professor of philosophy, he sat for eight years as an elected member of the Baden Upper House and took an active part in legislative matters. He became professor of philosophy at Berlin in 1915, and after the war he became a member of the Prussian Landtag and parliamentary secretary of state in the Prussian Ministry of Worship and Instruction. In 1921 he was also a member of the government of the German Republic. It is not difficult to see that responsible participation in public affairs helped to shape his thought concerning the philosophy of history.

Troeltsch's philosophy of history is developed in the third volume of his *Gesammelte Schriften*. This volume, entitled *Der Historismus und seine Probleme*, is a compilation of articles, but it has much greater unity than any of the other volumes except the first, the *Soziallehren*. It was the last volume to come from his own hand. His philosophy of history is thus the concluding work of his life. Even so his plan is worked out only in part. This third volume gives what he called the formal philosophy of history, and was to be followed by a volume on its material philosophy. But the fourth volume as actually published was issued after his death and is made up of material of quite early date. As for the second volume, entitled *Zur religiösen Lage, Religionsphilosophie und Ethik* and dedicated to Paul de Lagardes, it collects essays which cover a period of nearly twenty years—1894 to 1913—during which time the author's views underwent much modification. Hence in the last year of his life—he was only 58 when he

[5] Certain of the ideas of both the monograph on Protestantism and the *Soziallehren* are to be found in English in Troeltsch's *Protestantism and Progress*.

died—we find Troeltsch planning, when his philosophy of history shall have been completed, to return to the specifically religious field and to bring to completion his philosophy of religion—that being, as he says, his first love.

It is, then, to *Der Historismus und seine Probleme* that we must chiefly look for Troeltsch's philosophy of history. To this treatise, however, must be added his article on "Historiography" in Vol. VI of Hastings' *Encyclopedia of Religion and Ethics* (1914) and the five lectures published under the title, *Christian Thought, its History and Application,* and edited by Baron von Hügel, who had become Troeltsch's close friend. These lectures were prepared for delivery in England, and three of them were grouped under the title, "Ethics and the Philosophy of History". Troeltsch died in the month before the time appointed for the delivery of these lectures, and they were read by Professor C. C. J. Webb, Principal Ernest Barker, and others.

Troeltsch considered that the slow revival of philosophy, following upon its state of suspended animation which began in 1848, was effected through the taking of the philosophy of history as the center of interest. And here emerged the first problem with which his treatise on the subject is concerned—the problem of naturalism and historicism.

This problem Troeltsch solved through a logic of history, which he worked out primarily under the influence of Dilthey, to whom, with Windelband, the volume *Der Historismus* is dedicated. Those early and fruitful studies in the history of Protestantism and of the Enlightenment had thrown him into relation to Dilthey, both in respect to the field of study and the nature of the historical task. He joined with Dilthey in rejecting the 'monism of method' in science and in making an emphatic distinction between the natural and the mental sciences. This distinction in respect to method is based partly upon the necessity of distinguishing between the natural-science conception of causality and psychical causation. The causality of natural science implies a necessary quantitative equivalence between cause and effect after the model of the law of conservation of energy, and it abstracts from all qualitative distinctions. The causality of historical science, on the other hand, says Troeltsch in his article on "Historiography",

"is something entirely different, being almost exclusively a matter of psychological motivation. In the historical sphere nearly everything passes through the medium of consciousness, and in the last resort all turns upon the constant interaction of conscious efforts, into which even the unconscious elements tend to resolve themselves. Thus the peculiar irrational quality and initiative of the individual consciousness make themselves felt in the ultimate result, alike in the individual life and in the life of groups." "In the historical process, moreover, there ever emerges the fact of the *new*, which is no mere transformation of existent forces, but an element of essentially fresh content. . . . Accordingly psychological motivation differs in all respects from natural causation."

This distinction of the historical method from that of natural science gets its substance from the characteristic concepts which the former method requires. Of these concepts the two most important are the concept of individuality and individual totalities, and the concept of development which is appropriate to history.

According to Troeltsch everything turns, for the philosophy of history, on the conception of individual totalities. History has no elements, such as natural science has, which can be combined according to abstract universal laws. What it has to do with are the structures and processes of cultural life, which, although they may contain many elements of both the psychical and the physical sort, and may include much complexity and many tensions, yet have an inner coherence and unity which gives them genuine individuality. Such individual totalities are: nationalities, states, classes, guilds, periods in civilization, cultural tendencies, religious fellowships, complex processes of all sorts, such as political revolutions or the industrial revolution.

Under the head of the conception of individual totalities Troeltsch ranges several subordinate but essential conceptions. One of these is the conception of the originality and uniqueness of each of these totalities, which can be grasped by sympathetic insight provided there is an adequate basis of factual knowledge. With this conception must be linked the recognition of genuine freedom of choice and of creative action on the part of individual persons. Furthermore, a selective activity on the side of the historian must be acknowledged, as he seeks for the essential and

characteristic in historical processes. But this selectiveness of the historian is not a merely pragmatic matter, because it is regulated by an inner unity of meaning and value which is possessed by each of the collective individualities. Here, however, meaning and value are intended primarily in a formal sense, so that they may be applicable to a period of stagnation, or to a society that is dancing on a volcano, as well as to such as may possess more positive value.

This unity of meaning which a given individual totality necessarily has is something immanent, which can be grasped only as we give a very large place to the conception of the unconscious—in an historical, not a psychological, sense of the term—alongside of the conscious pursuit of purposes. And this recognition of an inner unity of meaning which is largely unconscious but potent leads Troeltsch to the conception of collective minds (*Gemeingeiste*). A collective mind, to his thought, is not a mystical entity which might exist before or without individual persons; but the recognition of it saves us from thinking of society as merely the accidental interplay of individual consciousnesses. It is really the primary phenomenon of history. Moreover, it is applicable not only to states and nationalities, but also to quite loose and free combinations of thinking and feeling, such as schools of thought or of art. A collective mind or common spirit is simply the inner aspect of a given individual totality with which the stream of historical events may actually confront the historian. The relation of these collective minds to individual minds, furthermore, is an infinitely varying one and constitutes the historian's most constant and difficult task.

The historian's objects, then, are the individual totalities, such as the Renaissance, the Reformation, Antiquity, with their inner unity of meaning. But these objects belong to an uninterrupted stream of becoming. Hence, alongside of the conception of collective individuality Troeltsch places the historical conception of development.

The historical conception of development must be distinguished from the conception of evolution in natural science because this latter has nothing to do with meanings as sources of unity and as potent in the course of events. The conception of development

must also be distinguished from the idea of progress, which belongs to philosophy and is a secularization of Christian eschatology. The historical conception of development denotes the process that issues "from the essential element of certain psychical efforts, the working out of the consequences that are latent in the earliest beginnings, the dynamic element in psychical forces which are not exhausted in a single manifestation, but work out towards a result—forces in which exists a tendency to development akin to logical evolution. . . . Wherever this tendency asserts itself, it constitutes a principle that organizes the aggregates, and moves them onward from within." [6]

With this conception of development is bound up a conception of time different from that employed in natural science. The latter depends on space and movements in space. The former depends on inner meaning and on memory. From this point of view the present always carries past and future within itself in productive fashion. Time in this historical sense cannot, strictly speaking, be measured; one can only point out caesuras within it.

This notion of development as being conditioned by the potency of inner meanings, and the thought of the present as spanning past and future in such a way as to ground a creative process and to make possible the bringing to pass of results that are essentially new—these ideas lead on to the conception of the further development of history in the midst of which we are, and to our responsibility for taking a creative rôle in that further development. Here we are close to the central motives of Troeltsch's philosophy of history, to which we must return a bit later in our discussion.

What we have noted thus far constitutes his logic of history in its main features. But this logic is only latent in much of the actual work of historians, who sometimes even misconceive the logic of their task. In fact Troeltsch finds a broad difference between German and Anglo-French philosophy of history. "The German", he says, "has an underlying religious-mystical, pantheistic-theistic tendency, through which the mystery of individuality is thrust into the foreground; the Anglo-French has an atomistic, empiricist, mathematical tendency, which then may be

[6] Cf. art. "Historiography" cited above.

combined—not in principle but in result—with *Nouveau Christianisme,* or the religion of humanity, unless, perchance, it is amalgamated, as in England, with scepticism, or even with orthodoxy, or with both."[7] Nevertheless, he holds that the logic of history as he has set it forth is immanent in historical processes, and that it emerges through intercourse with objective historical events and through devotion to subject-matter. Only, there must always be added to industry and accuracy in research a penetrative insight. The writing of history involves both factual knowledge and intuition,[8] for "the most characteristic achievement of the historian's gift is the bringing to light of the great concrete structural coherences" in history.

Before going on to other phases of Troeltsch's thought we should also take account of the fact that he does something to bridge the cleft between the natural and the historical sciences by a brief critique of naturalism. He points out that the Neokantians are hampered in their defence of the independence of the cultural sciences by the fact that, for Kant, science was simply Newtonian physics, alongside of which ethics was ranged as being out of all connection with science; and they are also hampered by the fact that "out of the moral alone no understanding and no logical construction of history can be gained".[9] Troeltsch further maintains that logic breaks through the notion of nature as a closed system of physical forces, because the presuppositions of every science involve a decision or positing by the will, "the rightfulness of which must be confirmed subsequently by the fruitfulness of the construction". "This", he adds, "remains the element of truth in all so-called pragmatism, and was decisively affirmed also by Goethe."[10] In general, he would replace the terms "Geisteswissenschaften" and "Kulturwissenschaften" with the designation "historisch-ethische Wissenschaften". By this designation he would bring out the close interconnection between *Sein, Werden,* and *Sollen* in the historical realm, and would indicate the characteristic difference between this realm and that of natural science without establishing a complete cleft between the two.[11]

[7] *Historismus,* p. 20.
[8] *Op. cit.,* p. 40.
[9] *Op. cit.,* p. 90.
[10] *Op. cit.,* p. 92.
[11] *Op. cit.,* p. 83 n.

Passing to psychology, Troeltsch would uphold a theory of interaction as the only one that corresponds to the facts of actual experience;[12] and accordingly would maintain the reality of a characteristic psychic causality which in our apperceptions makes possible a breaking through the merely natural order by spiritual contents.

As to the general philosophy of nature, Troeltsch affirms that, notwithstanding the relative independence of history, "it cannot be indifferent to the so-called problem of vitalism and must emphasize in the strongest manner its connection with the vitalistic tendencies in biology", though details may be left fully open.[13] In this matter he frequently extends a welcoming hand to Bergson —also to Driesch. At the same time he is equally concerned to recognize how nature in important ways shapes history. He cites with approval H. G. Wells's tracing of the continuity between the historic and the prehistoric, and he points out how often physical causes introduce the element of contingency into the development of meanings in history. In fact, his formal solution of the problem of naturalism and historicism is worked out through the idea of contingency, as can be seen in his article on that subject in Hastings' *Encyclopedia of Religion and Ethics*. The necessity for compounding the idea of law with the idea of contingency makes room for individuality and creativeness in the historical process, for the rôle of will as underlying all the *a-prioris* of the several sciences, for the accidental in history which is often introduced by physical causes, and for the polarity belonging to historical inquiry by reason of its joint quest for the factual and the meaningful.

In the foregoing logic of history Troeltsch was substantially in accord with Dilthey. At least, his conceptions of individuality, of the coherence of life, of its development through inner meanings, and of the uniqueness of psychic causality, and his appeal to sympathetic insight and to the realities of living experience, he shared with Dilthey, whose influence he gratefully acknowledged. But while this logic of history solved for him the problem of naturalism and historicism, it left him with the problem previously mentioned, that of historical relativism. In wrestling with

[12] *Op. cit.*, p. 94.
[13] *Op. cit.*, p. 97.

this problem he could not look to Dilthey for aid, since Dilthey was to a great degree responsible for the urgency of the problem in his thought. Dilthey's thinking issued too much in psychologism to give permanent satisfaction to Troeltsch. He finds that thinking taking the paradoxical turn of trying to combine John Stuart Mill and Schleiermacher,[14] with the result that in an address on his seventieth birthday Dilthey presents the "Anarchie der Werte" as the immediate result both of the great German historical writing and of his own intellectual work.[15] Troeltsch feels such a limitless relativism to be burdensome and confusing for the mind and laming for practical living, and to the problem thus presented he addresses himself in the second phase of his philosophy of history.

The problem as he defines it in his *Historismus* is that of finding standards or norms for the judgment of historical matters. Essentially this problem had emerged for him earlier out of his theological study, and had received treatment in *Die Absolutheit des Christentums und die Religionsgeschichte*, published (1902) several years before his monograph on the History of Protestantism. In this study he criticized and set aside the idea that absoluteness could be established for Christianity either on the basis of external miraculous events or on the basis of inward, spiritually miraculous power, and then he went on to consider the Hegelian way of establishing Christianity's absoluteness by showing that it is simply the perfect expression of religion as such. Such a procedure he found to be in conflict with the conception of individuality in history. Christianity, then, must be regarded as one of the individual totalities which the logic of the subject shows to be the real objects of historical study, and any affirmation of its absoluteness must be a matter not of proof but of intuition and personal faith. Troeltsch did, indeed, conclude his study with an argument that Christianity had a higher claim to universality, by reason of its teachings concerning God and man, than the other existing religions; but in later years he abandoned this argument.

Concerning this book, *Die Absolutheit*, etc., Troeltsch said that it was the germ of all that followed in his writing on the philo-

[14] *Op. cit.*, p. 512.
[15] *Op. cit.*, p. 125.

sophy of history. The problem of relativism which had developed out of his participation in the *religionsgeschichtliche Schule* he found to be present throughout history. Indeed, so strongly was he impressed with the pluralism of cultures that in his English lectures he wrote: "Even the validity of science and logic seemed to exhibit, under different skies and upon different soil, strong individual differences present even in their deepest and innermost rudiments." [16]

The initial effect of such relativism in the field of history is, Troeltsch said, appalling (*erschreckend*). "The essential and necessary relativism of genetic-historical thinking appears to stand in radical and hopeless contrast to any thought of a universal, absolute goal, and appears to make utterly impossible the solving of an historical crisis in the direction of such goals." [17] Troeltsch was writing this part of his *Historismus* in 1916, in the midst of the War, and being at one and the same time a philosopher of history and a responsible participant in public affairs, he found such a problem intolerable.

For aid in solving the problem, as it had emerged in the religious field, he had already turned from Dilthey to the Southwest German School of philosophy, to Windelband and to Rickert. These thinkers emphasized the concept of the individual, the original and unique, in historical structures and processes, with greater force and clarity than Dilthey. They thus carried forward the essential contribution of German romanticism, as over against all mere rationalism, and preserved the distinctive characteristics of the German historical school, as contrasted with west-European methods of interpreting history. At the same time, in the spirit of Neokantian criticism, they were seeking for universal norms in the sphere of value. Hence they were led to grapple directly with the problem which Troeltsch felt to be basic for all history, the problem of *Sein* and *Sollen*, of actuality and value.

Rickert undertook to solve this problem, so far as history is concerned, by laying the conception of 'ought' at the foundation of his whole philosophy, and then by pointing out that the historian must always have a point of view and principle of selection,

[16] *Christian Thought*, p. 23.
[17] *Der Historismus*, p. 122.

which by rights should come from the realm of universally valid values. Thus the historian's principle of selection and the moralist's binding values can be made to coincide.[18] But this procedure leaves us in the lurch, as Troeltsch thought, for three reasons. First, it deduces a system of values *a priori,* and so conflicts with the idea of individual totalities in history which have their own inner meaning. Indeed, Rickert in the end concedes that, proceeding from the formal system of values, all characterization of entire ages, periods, and cultural unities is impossible.[19] Second, when considering the task of the historian, Rickert accords to him the privilege of an "open system", in which an indefinite expansion of cultural goods is possible. But the relation of these cultural goods to the formal system of universal values remains wholly accidental.[20] Third, since this philosophy makes all validity spring from the thinking and acting subject, it does violence both to the historical sense of the objectivity of historical events and to the religious sense of the metaphysical objectivity of the source of spiritual life.

Windelband, on his part, went back for his norms to the Kantian idea of humanity. But this idea Troeltsch held to be incompatible with the individual totalities of history and the plurality of cultures, and so felt obliged to set it aside, along with the conception of universal history. He affirms that history knows no oneness of mankind, and hence the idea of humanity is a pale abstraction which throws no light on historical problems.

Thus the problem remains on our hands. There can be no *Seins-Allgemeines,* in view of the pluralism of history. There must be a *Sinn-Allgemeines,* else how can we escape an anarchy of values? But how is a *Sinn-Allgemeines* to be derived from the individual in history in such a way as to be relevant to historical processes?[21]

Troeltsch's solution of this problem is through the idea of our moral obligation to effect a present synthesis of culture. For such a synthesis we need standards and values, but not such as claim absolute necessity and universality. Rather must the needed

[18] *Op. cit.,* p. 151.
[19] *Op. cit.,* p. 155.
[20] *Op. cit.,* p. 152.
[21] *Op. cit.,* p. 122.

standards and values emerge from history. This view is in harmony with the fact that history is repeatedly engendering the unique and new in the collective life as well as in individual persons. In our quest for values which shall guide our present constructive task Troeltsch says that "the only possible formula" is "spontaneity, apriority, sureness of conviction without timelessness, universal validity and absoluteness".[22] "Therewith the central concept of the theory of values becomes that of individuality in the sense of a union of the factual and the ideal, of the naturally and circumstantially given, and of that which is ethically to be achieved. In this sense the concept of individuality is that of thorough-going relativity of value. Relativity of value, however, is not relativism, anarchy, accident, caprice, but means the always flexible and freshly creative . . . interpenetration of what is and what ought to be."[23]

The distinction between relativity of value and relativism Troeltsch seeks to establish by showing that objectivity and *a priori* character may mark the standards to be derived from history by which in turn history is to be shaped. Objectivity is to be gained by the most attentive and unprejudiced sinking of oneself in the facts of the cultural area (*Kulturkreis*) to which one belongs, and then by the working out of ideals in responsiveness to the spiritual coherence of life which is emerging in this cultural area. By *a priori* character (*Apriorität*) Troeltsch means an autonomy in the process of the formation of standards by which the standards formed may be both new and relevant. The *a priori* element in this sense is not something structural to reason, as is the *a priori* with Kant. It is, rather, a spontaneous capacity of the mind, and its acceptance is a decision of the will. But then, in Troeltsch's view, "without such acknowledgment by the will there is no valid *a priori* whatever".[24]

This *a priori* element in the formation of standards out of the past which shall become active forces in the present and help to shape the future has for Troeltsch a religious and metaphysical meaning; and herein he finds a further basis for distinguishing between relativity of values and relativism. In his discussion of

[22] *Op. cit.*, p. 166.
[23] *Op. cit.*, p. 211.
[24] *Op. cit.*, p. 179.

the philosophy of religion he had developed the idea of a religious *a priori*. This idea stands for an activistic principle which has metaphysical grounding and is indispensable both for the religious life and for the gaining of truth. He sometimes expresses it by quoting Goethe's saying, *Im Anfang war die Tat*. It implies an active presence of the absolute Spirit in the finite, which is the essential ground of every process that has meaning for the philosophy of history. When following this train of thought, however, Troeltsch would preserve human freedom, historical individuality, and the relative distinction between history and nature, by an appeal to Leibniz's monadology. But such references to Leibniz, which recur from time to time, are never elaborated.[25]

If we combine the foregoing saying of Goethe, *Im Anfang war die Tat*, with the saying of Ranke which Troeltsch quotes over and over again, *Jede Epoche ist unmittelbar zu Gott*, we shall, perhaps, get the best clue to the reason why Troeltsch feels that he can accept a theory of the relativity of value and avoid what he conceives to be the dangers of relativism. Creative action is a moral obligation and belongs to the essence of mind. But creative action must work with the materials of history and seek to shape history. And in history we are met by meanings and values which are themselves, in part, the product of creative action. Both the objective achievements of other minds and the creative in our own minds have divine meaning, and the union of the two which yields new syntheses has divine meaning in a preëminent degree.

But the Kantian motif persists in making itself heard, and Troeltsch found it not easy to blend with the others. After developing the idea of historical individuality and the relativity of value he feels impelled to ask, What becomes of the great idea of humanity? It was, in the first place, he says, the great idea of the eighteenth century, powerful for the shaping of modern civilization in the Occident. As such, however, it is limited in its range of application. Troeltsch is, in consequence, led to distinguish between cultural and moral values. The idea of humanity, as it has worked for the development of freedom in the Occident, is a cultural value and like all cultural values has an ethically obligatory character; but because it derives its meaning

[25] *Gesammelte Schriften*, vol. II, p. 764.

so much from western civilization it is not universally valid. Nevertheless, imbedded in the idea of humanity there are moral values, which because of their formal character are essentially universal, and are bound to have a certain meaning the world over as human contacts on this planet increase. Such are sincerity, trustworthiness, justice, mutual respect, mutual obligation, and the like.[26] But because of the formal character of the moral values they are less potent than cultural values, and their application is in the sphere of personal life, beyond the reach of historical judgment.

Furthermore, even the morality of personality and of conscience in the last analysis does not, in the thought of Troeltsch, escape from a certain relativity. He concludes a discussion of moral and cultural values as follows: "The Idea of Personality, which, in the form of Freedom, determines everything in the morality of conscience, and, in the form of Object, everything in the ethic of values—this idea is, after all, a Western belief, unknown, in our sense, to the Far East, and pre-eminently and peculiarly the destiny of us Europeans. But in view of the whole of our history we cannot but believe that it is for us the truth." [27]

But if moral values, as distinguished from cultural, cannot furnish effective standards for the needed synthesis of culture, how far is Troeltsch able to organize cultural values so as to secure such standards? This is a question that was to have been answered in the projected fourth volume of his *Gesammelte Schriften,* in the place of which stands the present posthumous fourth volume, made up of earlier essays.

Nevertheless, something of the direction of Troeltsch's thought in this field is contained in the *Historismus,* and can best be brought out through his relation, convergent and divergent, to Max Weber. He speaks of this man as the greatest of Rickert's intellectual and spiritual partners, and as an overpowering personality under whose spell he himself came. It was Weber who made him feel that German philosophy of history had been one-sidedly ideological and must become more sociological. But it was Weber's recognition of the ideological in sociology which

[26] *Der Historismus,* pp. 193–199.
[27] *Christian Thought,* p. 99.

especially attracted him. Weber had shown, as was noted earlier in this paper, that capitalism cannot be understood apart from "the capitalistic spirit", and that "the ethico-religious spirit of Calvinism had a special significance for the arising of this capitalistic spirit".[28] It was this recognition that inner spiritual attitudes are socially productive forces, as well as social products, which inspired Troeltsch and bore fruit in the *Soziallehren*. This view was in harmony with the principle in his philosophy of history according to which religion furnishes a needed grounding for a present creative synthesis of culture.

But in respect to the system of values Troeltsch diverges sharply from Weber. The latter finds that an irreconcilable polytheism of values lays claim to us. But the European, under the influence of Judaisim and Christianity, must be monotheistic in his devotion —he can have only one value-deity. And for Weber this is national strength and greatness. Hence some termed him the modern Machiavelli, and Troeltsch accepts the designation, provided one adds to it Weber's sharp emphasis on the moral and on the sense of justice in home and foreign politics. This position is with Weber confessedly a selection and a decision of the will, and so far forth it would seem to be justifiable on Troeltsch's principles. Nevertheless it is repugnant to him, and he seeks a wider historical totality as the sphere for the present synthesis of culture.

This wider totality is European, or European-American, civilization. Hence his volume on the philosophy of history closes with a section on "Der Europäismus". Thus Troeltsch sets before all those who join both him and Weber in rejecting the contemplative type of philosophy of history, and adopt the ideal of seeking to shape history in the light of its philosophy, the ideal far wider than Weber's of discovering and developing further the inner unity of European culture. In the pursuit of such an ideal he finds himself in essential harmony with Walter Rathenau.[29]

The most effective instrument for the desired new synthesis of European culture, says Troeltsch, would be a great artistic symbol such as the *Divina Commedia* and *Faust* were for their

[28] *Protestantism and Progress*, pp. 132 ff.

[29] *Der Historismus*, p. 758.

times. But the philosopher of history has his part to play, and it is one for which the present world-crisis urgently calls. Troeltsch's actual discussion in the conclusion of his *Historismus* is given chiefly to the problem of periodizing European history. This work must be done on a sociological basis in order to be objective. But his final emphasis is on the ideological content. This inner, spiritual-cultural content must get itself a new sociological body, and at the same time it must be reworked so as to supply to the sociological body fresh, new spiritual energy. To such an end science, literature, art, philosophy, and education must conspire.

At this point Troeltsch's philosophy of history turns back to his philosophy of religion, which, however, was never given organized expression. We can best get the trend of his thinking by noting the critique of his own earlier work, *Die Absolutheit des Christentums*, which he makes in one of his undelivered English lectures. "Historical facts . . . have welded Christianity into closest connection with the civilizations of Greece, Rome, and Northern Europe. . . . It stands or falls with European civilization; whilst, on its own part, it has entirely lost its Oriental character and has become Hellenised and westernised. Our European conceptions of personality and its eternal, divine right, and of progress towards a kingdom of the spirit and of God, our enormous capacity for expansion and for the interconnection of spiritual and temporal, our whole social order, our science, our art—all these rest, whether we know it or not, whether we like it or not, upon the basis of this de-orientalized Christianity."[30] "Christianity could not be the religion of such a highly developed racial group if it did not possess a mighty spiritual power and truth; in short, if it were not, in some degree, a manifestation of the Divine Life itself."[31]

But, as is suggested in *Der Historismus*, Troeltsch sees something of European haughtiness in conceiving that "Palestine, Rome, Wittenberg, and Geneva are the central points of the earth".[32] He looks for other new syntheses of culture besides the European-American, and ultimately for an inclusive synthesis—which, how-

[30] *Christian Thought*, pp. 24–25.
[31] *Op. cit.*, p. 26.
[32] *Der Historismus*, p. 707.

ever, lies beyond our intellectual horizon. Hence he says that "this synthesis cannot be already attained in any one of the historical religions, but that they are all tending in the same direction, and that all seem to be impelled by an inner force to strive upward towards some unknown final height, where alone the ultimate unity and the final objectivity lie. And, as all religion has thus a common goal in the Unknown, the Future, perchance in the Beyond, so too it has a common ground in the Divine Spirit ever pressing the finite mind onward towards further light and fuller consciousness, a Spirit Which indwells the finite spirit, and Whose ultimate union with it is the purpose of the whole many-sided process."[33] It seems, then, that Troeltsch was seeking a unity between his conviction that every epoch is immediate to God, and his conviction that there rests upon us a moral and religious obligation to effect in the present a new synthesis of culture in the light of historical knowledge; and that he found this unity, not through a Protestant-Christian justification by faith, but through a more generally religious justification of faith.

What should be our estimate of Troeltsch's philosophy of history? One is tempted to point to certain resemblances between some of his ideas and those set forth in Woodbridge's book, *The Purpose of History*, which is as compact, swiftly moving, and lucid in style as Troeltsch's writing is diffuse, laborious, and often obscure. Woodbridge lays emphasis on the pluralism of history, and yet finds a continuity also, based on a right understanding of the time-process. He, too, finds that, while there is no one purpose discoverable in all of history, "history is itself essentially the utilization of the past for ends". Thus Woodbridge, on his part, emphasizes its selective character, seeks values for the testing of it, and would make values means for reshaping historical processes. The purpose of man's history, he says, "is so to use the materials of the world that they will be permanently used in the light of the ideal perfection they naturally suggest". But notwithstanding these resemblances Troeltsch would undoubtedly have regarded Woodbridge's philosophy of history as being more akin to the West-European type than to his own, and would have found it exemplifying the influence of the naturalism which he

[33] *Christian Thought*, p. 32.

opposed. True, Woodbridge's naturalism is more inclusive and richer than the philosophy which Troeltsch is opposing under that name. But the latter could never have written, "More generally expressed the continuity of history is the continuity of matter", even though Woodbridge supplements this statement by adding: "But in itself it is inert and impotent. Activity of some sort must penetrate it, if there is to be anything effected." [34]

Evidently one's estimate of Troeltsch's philosophy of history must turn quite largely upon the validity of his conception of historical individuality—that is, of individual totalities or collective minds—and of the derivation of norms therefrom. This conception, the fruit of German romanticism, which Troeltsch thinks of as giving the German treatment of history a place of preëminence, lacks the validity, as it seems to me, which is required if it is to be made all-controling and hence the determiner of norms. Whatever objectivity any periodizing of history may be shown to have can hardly justify the treatment of the great cultures of the world as though they were like the 'island universes' of the astronomer, at least so far as their inner meaning is concerned. But this is what Troeltsch does when he regards these cultures as being at the present time practically unintelligible to each other.

Likewise the theory of the relativity of values, which holds that their validity is determined by the cultures in which they emerge, seems to me no adequate solution of the problem involved in cultural synthesis. Troeltsch's conception of a synthesis of European culture, which he vigorously enunciated during and after the war and set forth as an ethical task calling for all men's creative energies, is admirable and potent as compared with the doctrines of nationalism. But what is to prevent such a synthesis from becoming a consolidation of cultural strength against rival cultures? Troeltsch's faith that every culture has its metaphysical rights is something, but not enough, so long as he does nothing towards thinking these cultures together.

On the other hand many features of his philosophy of history should commend it to us. Such are his combination of historical realism with the task of a present synthesis of culture; his appeal to penetrative insight as supplementing factual knowledge; his

[34] *The Purpose of History*, pp. 4, 82, 87.

recognition of the creative rôle which spiritual meanings and processes may play in history; his transcending of nationalism and his desire to avoid unconscious European arrogance in historical thinking; and his own insistence on penetrating through historical empiricism and epistemology to a religious and metaphysical view.

But what values are available for guiding a cultural synthesis which do not subordinate that task to the plurality of cultures as being the more ultimate aspect of things? We can gain an answer to this question if we will go back of German romanticism to the radical humanitarianism of the eighteenth century. As has been noted, this was a period in which some of Troeltsch's best research was done; but its ideas of personality, of freedom, of equality, of humanity and of progress became subordinated in his own philosophy to the ideas of historical individuality and development as they emerged from German romanticism. But those humanitarian ideas are not limited in their validity because they were employed as instruments in the upward struggle of the middle class. They are ideas which must receive their credentials of validity at the hands of an autonomous ethics rather than from their immanence in certain historical periods, but they are ideas which are not too formal to play a decisive historical rôle, as the eighteenth century shows. It would seem that they played a significant rôle, on either side of the council table, at the recent conference concerning the affairs of India.

These values enable us to see history in a perspective in which objectivity and philosophical meaning can unite, as Hobhouse unites them in the conclusion to the first part of his *Morals in Evolution:* "The double meaning of 'humanity' as an expression for a certain quality that is in each man, and as an expression for the whole race of men, is not a mere ambiguity. The two meanings are intimately related, for 'humanity' as a whole is the society to which, by virtue of the 'humanity' within each of us, we really belong, and these two meanings are the poles between which modern ethical conceptions move. Thus, if we are to sum up the whole process sketched in this Part in a phrase, we may say that it is in this double sense to realize humanity." [35]

[35] *Morals in Evolution*, pp. 357–358.

But from the standpoint of humanitarian values and progress it becomes very necessary to recognize pluralism in history. Only, the pluralism which will most need recognizing is not that of cultural areas (*Kulturkreise*), but that of strands of positive ethical and cultural value interwoven and entangled with strands of negative or indifferent value. From this point of view the task of cultural synthesis becomes one of disentangling and reweaving, with the idea of a world-civilization always in view, something the ground-pattern of which we already know.

One is thus led to feel that to Troeltsch's watchword, "Every epoch is immediate to God", and to the watchword, "In the beginning was the Deed", should be added, as one no less important, "In the beginning was the Logos". These three ways of viewing the drama of history cannot be combined without modifying the intent of each when taken separately. But one may suspect that Troeltsch would have been more successful in combining the first two if he had given larger scope to the third. Nevertheless, it remains true that few philosophers of history have earned better than he the right to grapple with the task through significant contributions to the history of thought and of culture.

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DESCARTES' PHILOSOPHY OF MIND

DESCARTES is a thinker whose very reputation and influence have been serious obstacles to the correct understanding and interpretation of his doctrines. Certain aspects of his philosophy have received an undeserved emphasis, while other phases have not been given the prominence to which they are rightfully entitled. The interpretations of his doctrine by disciples, and subsequently by historians of philosophy, have become so thoroughly conventionalized and associated with threadbare formulæ that even interesting and philosophically significant insights have eluded students of his philosophy. This is preëminently true of his 'philosophy of mind', understanding by this expression his conception of the human mind, its nature and significance. The explanation of the neglect of this phase of his philosophy is not difficult to conjecture. His followers were so preoccupied with the *cogito, ergo sum,* and his views of the relation of mind to body, that they completely ignored his extremely subtle and profound analysis of the nature of the mind itself.

The second *Meditation* bears the suggestive title 'Of the Nature of the Human Mind; and that it is more easily known than the body',[1] a title under which Descartes discusses those topics which we have chosen to call his 'philosophy of mind'. Moreover, the discussion, as the title suggests, consists of two parts: the first is concerned with the inherent nature of the human mind, while in the second he expounds his doctrine of the immediacy and consequent certainty of the mind's knowledge of itself.[2] His division of the discussion in this manner is somewhat arbitrary, but for the sake of convenience the exposition which follows will adhere to it.

[1] The English translation of *The Philosophical Works of Descartes* by Elizabeth S. Haldane and G. R. T. Ross is employed in all quotations. The references to this edition will be indicated by volume and page only. *Meditation II* appears in Vol. I., pp. 149–157.

[2] The first division extends from the beginning of *Meditation II* (Vol. I, p. 149) to the paragraph commencing with the words: "From this time I begin to know" (p. 153); the second division extends from this point to the end of the *Meditation.*

1. *Of the nature of the human mind.* Descartes' discussion of this first topic is incidental to the main line of argument of the Cartesian philosophy. His primary concern in the *First Meditation* is with the universal doubt which, at the beginning of the *Second Meditation,* culminates in the assurance of the existence of the self. He was anxious to establish the self's existence so that he might proceed at once to prove God's existence and thereby ultimately validate the universal belief in an external world. He paused to examine the character of the thinking subject only because it was necessary to do so before he could proceed with assurance to God and the outside world. It will, therefore, be necessary to disentangle his delineation of the nature of the thinking substance from the metaphysical context in which it is found, and to present it in its unity and coherence.

The antithesis between the 'that' and the 'what' of an entity is employed by Descartes early in the *Second Meditation* to describe the transition from the establishment of the existence of the self to a discussion of its essential nature. "I who am certain *that* I am, . . . do not yet know clearly enough *what* I am."[3] He has clearly put to himself the question of the 'what', *i.e.,* the essence, as contrasted to the 'that', *i.e.,* the existence, of the 'I', and we do not have to wait long for his reply to the question. "Thought", he says, "is an attribute that belongs to me, it *alone* cannot be separated from me".[4] In this statement he clearly not only regards thought as *an* essential attribute of the individual mind, but is equally emphatic in insisting that it is *the* essential attribute. The same emphasis is also to be found in the corresponding passage in the *Discourse on Method,* where he says: "I knew that I was a substance the *whole* essence or nature of which is to think."[5] The assumption that mind possesses but one essential attribute is entirely gratuitous; it parallels the assumption of Descartes' 'philosophy of nature' that extension is the sole property of body. In both cases he has dogmatically assumed, in accord with logical tradition, that an essential attribute is neces-

[3] Vol. I, p. 150. Descartes' statement has been made more direct by transposing the two clauses in this quotation. The italics in this and subsequent quotations are mine.

[4] Vol. I, p. 151.

[5] Vol. I, p. 101.

sarily unique and exclusive, that it is inconceivable for anything to possess more than one essential property. As a matter of fact, this assumption, although unwarranted, does not vitiate his conclusions because he conceived the one attribute so broadly as to include everything essential.

The examination of Descartes' general thesis that 'the mind is a thing which thinks' can be resolved into three specific inquiries, each of which will receive separate consideration. (*a*) What did he mean by the term '*thinking*'? (*b*) How adequate is his professed proof that thinking is the essential *attribute* or *quality* of the self? (*c*) In what sense is the self a '*thing*' or *substance*?

(*a*) What did Descartes understand by thinking when he defined the mind as a thing which thinks? His own words are explicit enough: "A thing which thinks . . . is a thing which doubts, understands, affirms, denies, wills, refuses, which also imagines and feels."[6] Thinking is evidently a very inclusive term, embracing, as it does, the whole gamut of mental activities; it is coextensive with 'consciousness' in so far as this term designates all mental processes and activities, cognitive, emotional, and voluntary.

An interesting feature of the Cartesian definition of thinking is the appeal to immediate experience which it involves. The several activities of thought neither require nor admit of formal logical definition; they are intelligible to everyone who has experienced them, but no amount of explanation will serve to give them meaning to anyone who professes to have no acquaintance with them. Descartes may never have given utterance to this view in so many words, yet many things which he said point to his acceptance of it. His first assurance of the existence of himself depended on his direct awareness of his own mental activities of doubting, etc. That he offered no explanation of each of the activities of thinking listed in his definition indicates that he regarded such explanation as unnecessary. He is certainly committed to the position that all psychological terms derive their meaning from introspection, and the view is certainly a sound one so far as it goes. But he failed to go far enough in his definition of thinking. It is a limitation of his philosophy of mind that he did not supplement his enumera-

[6] Vol. I, p. 153.

tive definition of thought by a comprehensive formula, descriptive of the general features of the mental life common to all phases of its activity. He has told us that thinking is the essence of mind, but he has not told us what is the essence of thinking.

(*b*) Descartes' proof that thinking, as just defined, is the essential attribute of the self assumes considerable prominence in his writings. The argument receives a continuous development, which it will be worth while to trace in detail. It is suggested in vague and obscure fashion in the *Discourse on Method,* elaborated with greater clarity in *Meditation VI,* criticized by Arnauld in the fourth set of *Objections,* and finally defended by Descartes in his reply to Arnauld. The same typically rationalistic argument appears throughout, and an examination of it will serve to illuminate certain features of Descartes' conception of the self.

To begin with, let us try to reconstruct the obscure argument suggested in the *Discourse.* Descartes concludes "that I am a substance the whole essence or nature of which is to think",[8] and the only premise for the argument appears to be the previous statement that "if I had only ceased from thinking, . . . I should have no reason for thinking that I had existence".[9] The chief obstacle to our appreciating the force of the argument is its apparent tautology; the premise and the conclusion seem to express the same thing in different words. If so, the professed inference is no inference at all and any discussion of its validity at once becomes meaningless. However, a more careful examination of the argument, especially in its later forms, discloses that it involves genuine inference. Whether the inference is valid or not is, of course, quite another question. The argument very simply paraphrased amounts to this: since I exist only when and in so far as I think, it follows that thinking constitutes my essence. The argument appeals to that primary intuition which is the starting-point of Descartes' entire philosophical system. I apprehend myself as existent and as thinking and this intuition is a sufficient guarantee both that I exist and that I am a thinking being. Introspection is the ultimate means of establishing the 'what' as well as the 'that' of the self.

[8] Vol. I, p. 101.
[9] *Ibid.*

The statements quoted above from the *Discourse* must have occasioned considerable dissatisfaction among Descartes' readers, for in his 'Preface to the Reader', which precedes the *Meditations,* he refers to the objection which has come to his attention that "it does not follow from the fact that the human mind reflecting on itself does not perceive itself to be other than a thing which thinks, that its nature or essence consists only in its being a thing that thinks".[10] In answer to this objection he promises to "show hereafter how from the fact that I *know* no other thing which pertains to my essence, it follows that there *is* no other thing which really does belong to it".[11] This promise is fulfilled presumably in *Meditation VI,* where he employs God as the logical principle which guarantees that all things are as they are clearly and distinctly apprehended by us. We clearly and distinctly apprehend thinking as the sole essential attribute of the self, and therefore it must really be such. The argument hinges on clarity and distinctness of ideas as the criterion of truth and is valid to the degree that the criterion is adequate.

Arnauld, the acute critic of Descartes, remained unconvinced by the proof in *Meditation VI.* He regarded the argument as one of the most vulnerable points in Descartes' system and devoted a large portion of his penetrating criticism to a refutation of it.[12] Descartes' replies to Arnauld[13] are not especially illuminating; they amplify, but add nothing essential to, his utterances in the *Meditations* proper.

The argument whose continuous development has just been traced illustrates admirably Descartes' rationalistic method of philosophizing. The clarity and distinctness of the intuition of the self as thinking renders self-evident the proposition that thinking is the essential activity of the mind. In addition, it confirms the contention of the previous section that Descartes regarded intuition as the final arbiter in matters psychological. His entire treatment of the subject testifies to his being a champion of the introspective method; he reposes absolute confidence in the results of the mind's simple inspection of its own activities.

[10] Vol. I, p. 137.
[11] Vol. I, p. 138.
[12] Vol. II, pp. 81–86.
[13] Vol. II, pp. 96–104.

(*c*) Up to this point the commentary on the proposition, 'the mind is a *thing* which *thinks*', has been concerned solely with the attribute, thinking; it is now in order to undertake the more difficult task of determining how Descartes conceived the *thing* which does the thinking.

Unfortunately he is neither clear nor consistent in his account of the nature of the thinking self; he seems to have oscillated between two conflicting views on the subject. The self as first introduced in *Meditation II* is clearly represented as being somehow present in the mental processes of which we are directly aware. How else are we to interpret the Cartesian insight that the existence of the self is intuited in the very act of doubting? But in the further treatment of the self, both in the *Meditations* and in the *Principles,* Descartes unequivocally states that the knowledge of the self is achieved through inference rather than direct intuition, and the whole handling of the subject from this point of view conveys the impression that the self is a mysterious substance distinct from its activities.

The former view of the relation of the self to its activities is certainly the more adequate. It not only receives expression in the opening passages of *Meditation II,* to which reference has just been made, but is suggested at the end of *Meditation VI,* where Descartes, in his discussion of the indivisibility of the soul, says: "when I consider the mind, that is to say, myself inasmuch as I am only a thinking thing, I cannot distinguish in myself any parts, but apprehend myself to be clearly one and entire; . . . And the faculties of willing, feeling, conceiving, etc. cannot be properly speaking said to be its parts, for it is one and the same mind which employs itself in willing and in feeling and understanding." [14] Remarkable as is this description of the unity and identity of the mind in its various operations of willing, feeling, and understanding, Descartes all too frequently abandons the profound insight which it contains and reverts to a typically scholastic conception of the substantiality of the soul.

The existence of a soul-substance, independent of the thought-processes, is established by inference instead of direct intuition; the existence of a substantial self is the logical presupposition of

[14] Vol. I, p. 196.

the activities of thought. The latter are not self-sufficient, but can only be conceived as inhering in and being sustained by a substantial reality other than themselves. The assumption underlying the argument is stated in the *Principles,* Part I, Principle XI: "It is very manifest by the natural light of reason which is in our souls, that no qualities or properties pertain to nothing",[15] and again Part I, Principle LII: "Nothing is possessed of no attributes, properties or qualities. For this reason, when we perceive any attribute, we therefore conclude that some existing thing or substance to which it may be attributed is necessarily present."[16] Now the various activities of thinking are so many qualities which must be referred to an underlying substance, the self. The argument is not convincing; one has a right to ask what prevents the thinking activities, as described in (*a*) and (*b*) above, from being self-sufficient. All that has been observed about their intrinsic nature would seem to be compatible with their possessing a substantive character. Descartes nowhere establishes the adjectival character of the thinking activities upon which his inference to the existence of a thinking substance depends.

In accordance with his usual procedure under similar circumstances, he avails himself of the principle of clarity and distinctness of ideas to bolster up his doctrine of a substantial soul. The mind is capable of forming a clear and distinct idea of a substantial self, devoid of all activities of thinking, but the activities themselves cannot be conceived except as supported by a thinking subject. This is the import of a rather involved statement in *Meditation VI:* "I find in myself faculties employing modes of thinking peculiar to themselves, to wit, the faculties of imagination and feeling, without which I can easily conceive myself clearly and distinctly as a complete being; while, on the other hand, they cannot be so conceived apart from me, that is without an intelligent substance in which they reside."[17] The argument in this form also is open to criticism. Without questioning the ultimate validity of clarity and distinctness as a criterion of truth and reality, it is certainly questionable whether I can conceive myself in isolation from all my thinking activities as clearly and distinctly as Descartes pro-

[15] Vol. I, p. 223.
[16] Vol. I, p. 240.
[17] Vol. I, p. 190.

fessed. On the contrary, it may be contended that the notion of a substantial self devoid of activities is even more palpably a metaphysical abstraction than that of activities not inhering in a self.

By a more fundamental line of attack it is easy enough to show the inadequacy of the conception of the self thus inferentially arrived at by Descartes. The self as conceived in this way is a philosophical superfluity; it fails to accomplish what it set out to do, namely, to explain the unity and self-identity of the mind in its various faculties and activities. A soul, inferred and subsisting apart from its manifold activities, achieves no unification of those activities. It is evident that Descartes' first description of the soul as a unity in its activities is much nearer the truth than the one just examined, but even his more adequate view of the relation of the mind to its activities has not solved the problem of personal identity. Granted that the unity of the self is *in* its activities, the more important question as to what unifies the diverse activities remains unanswered. Neither of Descartes' divergent accounts of the self—the intuitive and the inferential—throws any light on its real unity and its persistence through change. The limitation imposed upon his 'philosophy of mind' by his failure in this regard will become even more apparent in the sequel.

2. *That the human mind is more easily known than the body.* The analysis whereby Descartes substantiates this thesis is as subtle as any contained in his philosophy. What is more, it achieves an insight so profound that had he realized its full import and elaborated its consequences he might have taken Kant's place as the true founder of idealism in modern thought, and thereby the whole subsequent development of modern philosophy would have been completely transformed. As it was, he was satisfied to draw the epistemological consequence of his analysis, namely, that mind is prior to body in the order of knowledge, whereas he might well have made his epistemological analysis the basis of a thoroughgoing philosophical idealism. The observation which he made concerning mathematics may quite appropriately be applied to his own analysis of the priority of mind to body: "We are astonished that seeing how firm and solid was its basis, no loftier edifice had been reared thereupon." [18]

[18] *Discourse on Method*, Vol. I, p. 85.

The occasion of Descartes' analysis is the prevalent and seemingly natural prejudice "that corporeal things, whose images are framed by thought, which are tested by the senses, are known much more distinctly than that obscure part of me which does not come under the imagination".[19] This is the prejudice which he wishes to confute. He believes it possible to accomplish this by a careful examination of what is involved in the cognition of any particular natural object, such as a piece of wax. This famous illustration of the piece of wax is so admirable an example of philosophical analysis that we shall quote Descartes at length before attempting a commentary on his doctrine. "Let us take, for example, this piece of wax: it has been taken quite freshly from the hive, and it has not lost the sweetness of the honey which it contains; it still retains somewhat of the odour of the flowers from which it was culled; its color, its figure, its size are apparent; it is hard, cold, easily handled, and if you strike it with the finger, it will emit a sound."[20] This completes the description of the piece of wax in its original condition, and now a transformation is wrought: "But notice that while I speak and approach the fire what remained of the taste is exhaled, the smell evaporates, the color alters, the figure is destroyed, the size increases, it becomes liquid, it heats, scarcely can one handle it, and when one strikes it, no sound is emitted."[21] The data of the philosophical enquiry are all at hand: the piece of wax *before* heating has no sensible qualities in common with the piece of wax *after* heating, yet by common consent it is one and the same piece of wax. What is the ground for the assertion of the identity of the physical object in the face of the alteration of all its perceptible qualities? Descartes could not have formulated more clearly and forcibly this most baffling of philosophical problems, the problem of individuation.

He is able to eliminate at once the hypothesis that the substantial identity of the piece of wax is revealed through sense. "It could certainly be nothing of all that the senses brought to my notice, since all these things which fall under taste, smell,

[19] Vol. I, p. 153.
[20] Vol. I, p. 154.
[21] *Ibid.*

sight, touch and hearing, are found to be changed, and yet the same wax remains." [22] This argument is an application of the logical principle that nothing can be or contain the essence of a thing which changes while the thing itself remains the same. By an appeal to similar logic Descartes concludes that the imagination is as incapable as the senses of revealing the innermost nature of the piece of wax.

What then is the faculty of the mind through which the permanent and abiding unity of the piece of wax is apprehended? After the exclusion of sensation and imagination there remains only one possibility, namely, that the understanding, exercising its powers of conception and judgment, performs the synthesizing and unifying function which constitutes the self-identity of the piece of wax. A truly bold and ingenious hypothesis! Yet Descartes' own language is so definite that we cannot doubt that he propounded this hypothesis which we ordinarily associate with a much later stage in the development of modern philosophy. "We must grant", he says, "that I could not even understand through the imagination what the piece of wax is, and that it is my mind alone which perceives it." [23] Even more striking is the summary passage: "Its perception [24] is neither an act of vision nor of touch, nor of imagination, . . . but only an intuition of the mind." [25]

In his elaboration of this theme Descartes expounds the doctrine, so familiar in all post-Kantian philosophical discussion, of the interdependence of sensation and understanding in all perception. Perception is not a mere passive reception of sense-impressions from without; it is an activity whereby the understanding, through the exercise of judgment, interprets the sense-material. Descartes deplores the commonsense way of interpreting the perceptual situation which is embodied in ordinary language, and replaces it by the true philosophical account. "We say that we *see* the same wax, if it is present, and not that we simply *judge* that it is the same from its having the same color and figure." [26] The importance of the inferential element in all so-called per-

[22] *Ibid.*
[23] Vol. I, p. 155.
[24] "It" refers to the piece of wax.
[25] *Ibid.*
[26] *Ibid.*

ceptual knowledge is admirably summed up as follows: "When looking from a window and saying I see men who pass in the street, I really do not *see* them, but *infer* that what I see is men, just so I say I see wax. And yet what do I see from the window but hats and coats which may cover automatic machines? Yet I *judge* these to be men. And similarly solely by *the faculty of judgment* which rests in my mind, I comprehend that which I believed I saw with my eyes." [27]

How remarkably the entire line of thought just outlined parallels the central argument of the *Critique of Pure Reason!* Descartes is undertaking an analysis of one of the most salient features of our experience, the persistence of things despite the flow of time and the consequent alteration of their sensible qualities. Like Kant after him, he was investigating the nature of the category of substance. The piece of wax is merely one item in the order of sensible objects, which he selected at random as an illustration of an abiding substance. What is true of the piece of wax quite obviously applies to all substances. The conclusion to which his analysis leads him is that, although the changing qualities of a thing come to us through the senses, its abiding substance is contributed by the understanding. This is precisely what Kant expounded in his doctrine that substance is a category of the understanding.

Descartes has propounded a principle at the close of the second *Meditation* which might very well have been expanded into a great idealistic system. Instead, he disappoints us by reverting to the relatively insignificant thesis that "there is nothing which is easier for me to know than the mind",[28] or as expressed in the title of the *Meditation:* "Of the Human Mind; and that it is more easily known than the Body." [29]

We are naturally led to ask just why Descartes was unable to carry his analysis one step further and to set up mind as the ultimate principle of philosophical explanation. A full answer to this question would doubtless entail an inquiry into the philosophical motives and considerations which determined his accept-

[27] Vol. I, pp. 155 f.
[28] Vol. I, p. 157.
[29] Vol. I, p. 157.

ance of psychophysical dualism; yet, from the point of view of the present discussion, the inadequacy of his conception of mind, upon which we dwelt at considerable length in the first part of the paper, must be recognized as having been a considerable obstacle to his attainment of an idealistic world-view. The insufficiency of his conception of the substantiality of the soul manifests itself in a critical form in his explanation of the substantial identity of physical bodies: the substantiality of the wax is explained in terms of the understanding or mind, yet Descartes' earlier analysis of the mind revealed nothing which would enable it to confer substantiality on the wax. The piece of wax remains the same because it is so apprehended by the mind, but what entitled him to the assurance that the mind remained the same? The problem of individuality temporarily solved for the piece of wax breaks out in a more acute form in relation to the understanding. This insufficiency is, of course, remedied by Kant, who is able to back up his categories—substance along with the rest—with his conception of the "Transcendental Unity of Apperception". Descartes has no such principle to support his idealistic explanation of the substantiality of physical objects.

The *Second Meditation* has proved to be a rich storehouse of material relevant to what we have chosen to call the 'philosophy of mind'. In the first place, it contains an attempt, to be sure not altogether successful, to define the intrinsic nature of the human mind. Secondly, it presents an analysis of ordinary perceptual experience which has given due recognition to the rôle of the understanding as constitutive of certain categorial features of that experience. That the analysis was not carried far enough and that its metaphysical implications were not recognized is attributable to the difficulty of the problem and in no way detracts from the brilliance of Descartes' analysis. The subtlety of his analysis of mind can only increase our respect for Descartes as a philosopher and confirm the conviction that he is one of the most original and suggestive of modern thinkers.

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DISCUSSION

THE TIME-RETARDING JOURNEY AGAIN *

IN this rejoinder I must remind Professor Lovejoy again that we are dealing with *Einstein's* relativity. Einstein deduced his Special Theory from two postulates or "principles": the principle of the constancy of the velocity of light and the restricted principle of relativity. The latter, as stated by Einstein,[1] requires only that rates of *change* shall be describable by the same laws in any two unaccelerated systems. It says nothing as to inter-systemic interchangeability of *instantaneous configurations*, which being instantaneous do not "run their course".

The "classical principle of the relativity of motion", as understood by Lovejoy (p. 566), requires the interchangeability or reversibility of "*all* * relativity estimates". This means, for instance, that if, read from one system, a clock of this system registers $t = a$ and the coincident clock of another system registers $t' = b$, then, read from this other system, the first clock registers $t = b$ and the second $t' = a$. There is no such principle recognized either in classical mechanics or in relativity. For instance, when two meter rods, R and R', are moved relatively to each other in the direction of their length, the statement that at any moment the reading "*22*" of R, read from R, is opposite the reading

* Editor's Note: See "The Paradox of the Time-Retarding Journey" by Professor A. O. Lovejoy, this REVIEW, Vol. XL (1931), pp. 48 ff. and 152 ff.; discussion of the same by Professor E. B. McGilvary, pp. 358 ff., and "A Reply" by Professor Lovejoy, pp. 549 ff.

[1] "The laws by which the states of physical systems *undergo change* * are not affected, whether these *changes* * of state be referred to the one or the other of two systems of coördinates in uniform translatory motion" (*Electrodynamics*, p. 41). "If relative to K, K' is a uniformly moving coördinate system devoid of rotation, then natural phenomena *run their course* * with respect to K' according to exactly the same general laws as with respect to K" (*Relativity*, p. 15).

Here as elsewhere throughout this paper starred italics are not found in the original texts quoted. Also I refer to cited works by abbreviated titles if, in the previous papers of Lovejoy or in my own previous paper, full titles have been given with identifying details. Reference to any of the three papers just mentioned will be by page only, with a prefixed "L." or "McG." when this is necessary. Since all these papers appeared in Vol. XL of this REVIEW, no confusion will result. Born's *Einstein's Theory of Relativity* is the work referred to when Born is mentioned. When I speak of "system" I shall mean an *unaccelerated system of rectangular Cartesian coördinates*, unless some further qualification is mentioned.

"35" of R' is not reversible, in the sense that at that moment the reading "35" of R, read from R', is opposite the reading "22" of R'. Now a clock is no more and no less a metrical instrument than a meter rod. If "relativity estimates" of the coincident readings of *meter rods* in relative motion are not "reciprocal", *i.e.*, reversible, why should "relativity estimates" of the coincident readings of *clocks* in relative motion be reciprocal? Coincident readings are *not* "rates of change", nor does any one pair of them "run their course". Any such pair is an *instantaneous configuration.*

If Eddington or any other relativist has said: "All relativity estimates are reciprocal" (L. p. 156), and *meant* thereby that estimates from the reading of an instrument on either of two systems, as to the reading of any similar instantaneously opposite instrument on the other system, are reciprocal, he was making an obviously untrue statement. It is therefore unlikely that he meant what Lovejoy thinks he meant. Be that as it may, the place to get any principle to which Einstein's relativity is subject is Einstein's own writings. Like any other mathematical theory, the Special Theory must be judged by its own postulates and its own equations. In relativity *no* "estimates are reciprocal" except those which the postulates and the equations of relativity say are reciprocal.

But Lovejoy does not judge relativity by its postulates and its equations. He judges it by what he is pleased to call "the classical principle of the relativity of motion". Every appeal he makes to this principle as requiring reversibility of coincident clock-readings is absolutely irrelevant. Delete from his two papers every such appeal and everything he deduces therefrom as bearing on the Special Theory, and you will have something that looks like a pacifist newspaper that has passed through the hands of a censor in time of war. On the other hand, my omission of any reference to that principle finds its parallel, not in "*Hamlet* with Hamlet left out" (L. p. 566), but in *Hamlet* with Falstaff left out. I have always preferred my *Hamlet* in this expurgated form.

II. My previous paper, with the exception of less than four pages, was devoted entirely to the relation of clocks and physiological processes in unaccelerated relatively moving systems. Whatever retardations such clocks underwent took place only during periods of unaccelerated motion. I therefore find it difficult to understand why Lovejoy should say (p. 557) that I failed "to meet, or even to mention, the consideration" which he had "presented as the decisive proof that . . . any . . . way of escape" from the contradiction involved in

the clock-paradox "is impossible". The gist of that "proof" by Lovejoy is contained in two assertions: "The whole paradox, in its symmetrical form, presents itself *during the outward journey*, before any such acceleration occurs" as is involved in a round trip (p. 164). "The mischief has already been done *before* * the acceleration occurs" (p. 557). On the contrary, by the use of Einstein's own equations I showed in my paper that *no* mischief was done "during the outward journey", and thus I met his contention squarely. Lovejoy does not directly attack my equational treatment, except in one place. In other places he dismisses my conclusions on the ground that they are "completely at variance with the orthodox relativistic doctrine" or that they are "self-contradictory". I shall examine these contentions before I am done.

III. His direct attack (pp. 564–566) upon the way I used my equations is made in the following passage:

> *They are made from the point of view of only one of the travellers . . .* [*viz.,*] *only from the point of view of Paul or his cousin.* But Peter is equally entitled, in a world of relativity, to make measurements on his own platform. . . . The computation of Paul's cousin's age from Peter's point of view McGilvary fails to make. This astonishing omission is apparently due to a confusion between computing times *for* both platforms and computing them *from* both platforms. With all his equations . . . McGilvary has too few by half, since in none of the specific cases with which he deals does he apply this formula [*i.e.,* the Lorentz transformation] bilaterally.

If this means anything, *it means that a mathematical transformation does not truly transform.* I had thought that *correct* transformation is just what a correct *transformation* actually accomplishes. The Lorentz transformation does consistently transform, in the sense that, starting from measurements made in *either* system, the transformation enables one by calculation to ascertain *truly* the corresponding measurements as they are (or would be) *actually* made in the *other* system.[2]

[2] Let us consider a single example. On Paul's platform the point P is, by hypothesis of actual measurement on that platform, $7c \vee 91$ miles in the positive x-direction from A, the origin of that platform (*i.e.*, for P, $x = 7c \vee 91$); and by hypothesis of actual observation on that platform, the coincidence of P with P' takes place at time $t = 0$ by the clock at P. I have shown that the Lorentz transformation gives the time of this coincidence by Peter's clock at P' as $t' = -212\ 1/3$ (p. 364). Now by use of the equation $x' = \beta(x - vt)$, substituting therein the above values of x and t, and the values $\beta = 10/3$ and $v = c \vee 91/10$ used in my illustration, we get x' for P' as $x' = 70c \vee 91/3$. Thus, calculating *from Paul's platform*, we get *for Peter's measurements* the distance of P' from A' as being $70c \vee 91/3$, and the reading of Peter's clock there when P and P' coincide as being $t' = -212\ 1/3$.

IV. A familiarity with the use of the Lorentz transformation would have saved Lovejoy from another mistake here, and thus from using an argument to prove that I am wrong when the equations prove that I am right. He says: "But the distances M–A and A–P, from whichever platform determined, are *by hypothesis* * equal, as are the distances M'–A' and A'–P'" (p. 565). *This is not true.* On the contrary, the distance M–A, measured on either platform is 3 1/3 times the distance A–P, measured on that platform,[3] and the distance A'–P', measured on

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But of course there *is* some point on Peter's platform which is at the positive x-distance $70c \vee 91/3$ from A', *i.e.*, some point whose $x' = 70c \vee 91/3$, and is thus the point P' as that point is defined above; and there is *some* time when the clock at that point has the reading $t' = -212\ 1/3$. The question is what a computation made *from Peter's platform* says as to the point on Paul's platform coincident with P' ($x' = 70c \vee 91/3$) at time $t' = -212\ 1/3$ by Peter's clocks; also what such a computation says as to the reading of Paul's clock at that coincident point. To answer this question we take the transformation equations used on Peter's platform, *viz.*, $x = \beta(x' + vt')$ and $t = \beta(t' + vx'/c^2)$, and make substitutions in them of the values of x' and t' just given, and of the values of β and v given in the preceding paragraph of this footnote. Thus we get $x = 7c \vee 91$ and $t = 0$. But this point ($x = 7c \vee 91$) is the point P, and this time ($t = 0$) is the time $t = 0$ at which Paul says that P' with its clock-reading $t' = -212\ 1/3$ is at P.

Thus whether we start *from* measurements made on *Paul's* platform and compute *for Peter's* or *from* measurements made on *Peter's* and compute *for Paul's*, we get the result that P ($x = 7c \vee 91$) and P' ($x' = 70c \vee 91/3$) coincide at time $t = 0$ by Paul's clocks and at time $t' = -212\ 1/3$ by Peter's clocks. To say this in another way: when my "omission is repaired and the transformation equation for time is applied from both sides, there manifestly results a proof of the conclusion which McGilvary has endeavored", *not* "with elaborate irrelevance to controvert" (L. p. 566), but with elaborate relevance to establish. It is "astonishing" that any one who has ever used the Lorentz transformation should make the mistake that Lovejoy here makes. No wonder that, not knowing what is meant by a "transformation", and not knowing how to use the Lorentz transformation, Lovejoy should usually shy at my equations and jump on my conclusions with both feet. No one who has not actually used that transformation and thus seen that it consistently transforms has a right to criticize a theory that is expressed in that transformation.

[3] The distance A–P, measured on *Paul's* platform is by hypothesis (McG. p. 364) $7c \vee 91$, as is also the distance M'–A', measured on *Peter's* platform (p. 366). From the fact that by hypothesis (p. 366) M is coincident with $M'(x' = -7c \vee 91)$ at time $t' = 0$, the distance M–A, measured on *Paul's* platform, is obtained by use of the Lorentz transformation equation $x = \beta(x' + vt')$, from which, by substituting the above values for x' and t' and the values of β and v from footnote 2 above, we get for M $x = -70c \vee 91/3$. Since the Lorentz transformation correctly transforms, we learn that the distance M–A, measured on Paul's platform is $70c \vee 91/3$ and thus 3 1/3 times

either platform, is also 3 1/3 times the distance M'–A', measured on the same platform.

For the relativist's abashment Lovejoy concludes (pp. 565–566) from the false statement quoted above:

> Thus two persons . . . travelling on the same platform with the same velocity, cover *what for them are equal distances* * in the same direction in unequal times, one being 21 and the other 70 at the end of his journey, by the clocks on their own platform.

This conclusion would be entirely correct *if* the words I have italicized were replaced by *a true statement of the facts, viz.*, "what for them are distances unequal in the ratio of 3 to 10." But with this replacement there is nothing to shame the relativist. Lovejoy has here employed "the method of alternating options", the alleged use of which by relativists he finds so offensive. He opts the measure, as made on *Paul's* platform, of the distance A–P, and the measure, as made on *Peter's* platform, of the distance M'–A'. Finding these measures, thus made on *different* platforms, to be equal, he triumphantly reports that they are equal "from *whichever* * platform determined". What logic! No wonder that, not recognizing "the method of alternating options" when he himself actually employs it, he should characterize as "the method of alternating options" a *different* method used by the relativist. It is Lovejoy who "handles his equations in so original a manner", when he ventures to touch equations at all.

V. Lovejoy recognizes the necessity of defending his conclusion "that Peter and Paul's cousin will—if retardations actually occur as

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the distance A–P, measured on that same platform. I will not take the space to prove the incorrectness of the rest of Lovejoy's statement quoted above.

I had thought that "the first thing taught children in '*really* relativistic nurseries'" (L. p. 566) is that distances measured on either platform are found contracted when measured on the other platform. In our case the factor of proportionality is $1/\beta = 3/10$. Hence if the distance M–A *after* reduction on *Peter's* platform, is $7c\sqrt{91}$, it must have been, *before* such reduction, $70c\sqrt{91}/3$ on *Paul's* platform.

One cautionary remark is appropriate. Although M is $10/3$ as far from A as M' is from A', each measured on its own platform, the measure of the distance M'–A' as obtained on *Paul's* platform is not $10/3$ as great as that obtained on Peter's; on the contrary it is $3/10$ as great. The reason for this is that in getting the former measure the end-points of M'–A' are located simultaneously by *Paul's* clocks and not by Peter's, just as on Peter's platform the end-points of M–A are located simultaneously by *Peter's* clocks and not by Paul's. A correct use of the Lorentz transformation requires the use of the simultaneity of the correct platform. The reader can easily get the correct results by using the correct method.

physical facts—each be younger than the other at the same place" (p. 559). For proving this he admits that it is "necessary to establish only two propositions (1) that Peter and Paul's cousin *could* be born simultaneously; (2) that, according to the Special Theory, the comparative retardation arising while they continuously approached one another would be bilateral and equal". I shall take up these two propositions in order. Of the first he says:

> It can be shown by two distinct arguments that the relativist must admit that the births of Peter and Paul's cousin could be simultaneous, whether the judgment upon the question were that of an observer on Peter's platform, or of one on Paul's.
>
> *i.* In the first argument Paul serves, so to say, as *a logical intermediary** between his cousin and Peter. For an observer at A', on Peter's platform, the births of Peter and Paul are simultaneous; he *sees* them both occurring together at the place where he is. He also *knows* that indefinitely many other events on Paul's platform must be occurring *simultaneously with Paul's birth**; *i.e.*, that *the synchronized clocks on that platform all show the same reading when that event occurs** . . . one of these events may conceivably be the birth of *a** cousin of Paul's at some point, P, to the eastward of A . . . McGilvary explicitly tells us that . . . "the difference between 'simultaneity at the same place' and 'simultaneity at a distance' is not a difference in the connotation of 'simultaneity'", but only in "denotation." If this is assumed, the first argument clearly follows . . . it is an application to our hypothetical case of the principle: If two events are in the same sense simultaneous with the same event they are simultaneous with each other.

V*a*. There are two fallacies in this argument. The first is that any proof that *a** cousin of Paul's may be born at P at the time mentioned is no proof that such a possible cousin is *the* cousin of Paul's who was by hypothesis born at P at time $t = 0$ by Paul's clocks. To avoid confusion hereafter, let us call this latter cousin "Zebedee". But this *ignoratio elenchi* is not the fallacy on which I wish to dwell. I refer to the *petitio* latent in Lovejoy's argument, which *assumes* a simultaneity-at-a-distance that is common to the two platforms, *in order to prove the possibility* of such simultaneity. This can easily be seen. If the observer at A' is a *relativist*, he knows that *simultaneously with Paul's birth*, as simultaneity is determined on *Paul's* platform by clocks synchronized by light-waves, many other events are occurring on that platform. He also knows that *simultaneously with Peter's birth*, as simultaneity is determined on *Peter's* platform by clocks synchronized by light waves,[4] many other events are occurring on Paul's platform.

[4] In any system distance-simultaneity is the time-relation between any two events such that at the places of these events clocks in that system, synchronized by light waves, have equal readings on the occurrence of these events. This is the invariable connotation of "simultaneity at a distance" in the Special Theory.

But he also knows that these two groups of "other events" are *not identical*. Paul's group includes all events that occur at time $t=0$ by Paul's clocks, and thus includes Zebedee's birth which occurred at time $t=0$. Peter's group includes all events that occur at time $t'=0$ by Peter's clocks, and thus *does not include* Zebedee's birth, which occurred at time $t'=-212\ 1/3$, as is shown by the fact that the Lorentz transformation gives this as the time of Zebedee's birth by *Peter's* clocks (McG. p. 364).[5] Only on the assumption that what occurred at time $t=0$ at P on Paul's platform also occurred at time $t'=0$ on *Peter's* platform at coincident P', does Lovejoy get his conclusion. The observer at A' also knows that synchronized clocks on Paul's platform all show the same reading $t=0$ at the time of Zebedee's birth, as 'time' is determined on *Paul's* platform, *not* as 'time' is determined on *Peter's* platform. He knows what is contained in the affirmative part of the immediately preceding sentence because he recognizes a tautology when he sees one. If, in concession to Lovejoy's preference, he is allowed to think, he knows what is contained in the negative part of that sentence, because he can correctly use the Lorentz transformation. To use Lovejoy's own words with his own italics: "There is no reason why an *intelligent* observer on Peter's platform should be supposed to be incapable of recognizing this" (p. 560). But when this is recognized the "logical intermediary" ceases to intermediate.

V*b*. Lovejoy's second and "more direct" argument for proposition (1) is that the relativist must admit "*simultaneity between events on two different systems*" (pp. 560–561); otherwise he would be "denying the possibility of relative motion. . . . There must be a 'common while' if there is to be a relative motion; and this common while must contain common moments." Of course the relativist admits all this. There *are* for the relativist "common moments" on the two platforms: the births of Peter and Paul or the coincidence of A and A' is one such common moment, and the arrival of Peter at P is another (although the latter has not the same *date* by the clocks on the two platforms). The "common while" here is the time-interval between these two "common moments." The relativist does not deny the community of this "while"; he merely denies that this "common while" has the *same measure* on the two platforms. As I said in my previous paper: "You and I, travelling together, may agree that we passed 10 milestones *while* your watch was ticking off 15 minutes and mine 14"

[5] I assume that Zebedee was not like William James's daughter, who was "born in rapid succession".

(p. 374). In this case we have a "common while with common moments"; but we lack a *common measure* for this "common while"; yet nobody thinks that this lack makes our motion relative to the milestones impossible. Why should a similar lack in relativity make a relative motion impossible?

Thus Lovejoy fails to establish one of the propositions that he declares it "necessary to establish" before it can be proved that the births of Peter and Paul can be simultaneous on both platforms with the birth of Zebedee. The first argument toward establishing it is an *ignoratio* and a *petitio*; the second is irrelevant.

VI. We proceed now to the examination of Lovejoy's proof of proposition (2), which he declares it is necessary for him to establish. He acknowledges that the establishment of this presupposes the establishment of proposition (1): "We have, *then*,* Peter and Paul's cousin [Zebedee] born 'at the same time' at A' and P respectively" (p. 562), which in the context means born at the same time, as 'time' is determined on *Peter's* platform as well as on Paul's. Since the proof of proposition (2) admittedly depends on the prior establishment of proposition (1), and since the latter proposition has not been established, the former proof has no relevance here. But it is so "curious" that I must ask the reader's indulgence while I examine it.

Proposition (2) is, as we recall, "that, according to the Special Theory, the comparative retardation arising while they [Peter and Zebedee] continuously approached one another would be bilateral and equal". Lovejoy does not have to establish this proposition against the relativist; it is one of the best-known articles of the relativist's creed. But Lovejoy does not understand the meaning of this article: he labors under a most insistent and most amazing confusion between the comparative retardation ("lagging") of a clock[6] and the comparative smallness ("slowness") of any of its instantaneous readings. A relativistic clock "lags", not when it is *momentarily more slow*, but when through a time-interval it *runs more slowly*. The fact that my clock is running fast (or slowly) as compared with another does not imply that, at any one time, it has a greater (or smaller) reading than the other. Yet Lovejoy argues *from* the fact that in relativity there is a reciprocal retardation or lag *to* the conclusion that there is a reciprocal

[6] "As a consequence of its motion the clock *goes more slowly** (*geht . . . langsamer*) than when at rest" (Einstein, *Relativity*, p. 44). Its going more slowly is a rate of change and thus falls under the restricted principle of relativity. Its being more slow at any time is not a rate of change and therefore does not fall under that principle.

slowness of coincident readings at any instant! For instance (pp. 562–563):

> But it is implied by the usual version . . . that the mutual lag . . . will *actually occur on the respective platforms* . . . of Peter and Paul's cousin. And *therefore**, when Peter and Paul's cousin presently meet, each traveller will *be* physiologically younger than the other and each clock will show a record of fewer elapsed hours than the other. And this is *equivalent to saying** that the situation when Peter and Paul's cousin meet will be precisely that which McGilvary says is not implied by the theory—*"a mutual inversion of unequal coincident clock-readings" and physiological ages.**

The argument here is from a mutual *lagging* to a *mutual* comparative slowness. Surely no logician except Lovejoy (or, for that matter, no common-sense man who does not claim to be a logician) would say that the following reasoning is correct: "My clock *runs* more slowly than yours; therefore it *is slower* now". Any familiarity with the ordinary run of every-day clocks would show that there is something wrong with such an argument, for experience often shows that slow-running clocks are sometimes fast (and fast-running clocks sometimes slow). Until Lovejoy can show *by a correct use of the Lorentz transformation* that the Special Theory asserts that there is "a mutual inversion of unequal clock-readings", his proposition (2), *interpreted as he interprets it, as a statement about coincident clock-readings,* is utterly ungrounded. In my previous paper, on the contrary, I showed in detail (pp. 369–372) by the use of the Lorentz transformation that "it is *because* the clocks at coincident" points "have unequal and non-interchangeable readings . . . that the clocks of either system *run slowly** [*i.e.*, "lag"] as measured by the synchronism of the other". I distinguished between non-reasoning observers and reasoning accountants just for the sake of bringing out the distinction between *observed* non-interchangeable clock-readings and *calculated* retardation. I trust that all my other readers saw the point. Lovejoy did not; but neither does he lay a finger on any specific error in my calculations. Instead of this, he blandly says: "If McGilvary thinks that any different consequence can be drawn from the Special Theory [*viz.*, thinks that clocks on relatively moving systems do not lag], he has Einstein and the other mathematicians against him, and his quarrel is with them" (p. 562), an assertion as true, as irrelevant, and as misleading, as an assertion that if Lovejoy thinks that color is a physical quality of physical objects, he has all the epistemological dualists against him and his quarrel is with them. Just as Lovejoy does not entertain such a thought, so I did not deny that the clocks mutually lag. On the con-

trary I asserted that they do mutually lag. I denied that their coincident readings are therefore interchangeable.

VII. Again Lovejoy says (p. 563):

> One of the most curious confusions in McGilvary's paper is to be seen in his remarks on the question of the "physical reality" of the retardations. This *question** is, he declares, "ambiguous"; in fact, he suggests, it loses all meaning when we remember that "retardation, like largeness, is always a respective characteristic".

But I *didn't* say that the "question" is ambiguous. I said that *a quoted statement of Lovejoy's* on this question was ambiguous; and it *was* ambiguous, as will soon appear. Nor did I make any such suggestion as Lovejoy says I made. It is possible that my *remark* may have suggested to an epistemological dualist that, since largeness is a respective characteristic and therefore (?) is non-physical in epistemological dualism, and since retardation is like largeness, retardation is non-physical. But happily *I* am not responsible for any such "suggestion". On the same page, however, he seems later to have remembered what it was that I *did* call ambiguous; and then he claims that what I thus called ambiguous "is perfectly unambiguous".

> It means precisely what McGilvary expresses when he correctly says that . . . "it is agreed by all relativists that Peter's clock at A' ticked, and Peter's heart beat, 21 times from his birth till his arrival at P, and that the heart of Paul's cousin [Zebedee] beat, and Paul's clock at P ticked, 70 times from *this* cousin's birth till Peter's arrival at P." The (supposed) fact that Peter's clock ticked and his heart beat 21 times instead of 70 *is* the retardation.

But it *isn't*. In the case before us, that "(supposed) fact" is a *necessary* condition of the retardation, but not a *sufficient* condition. Another condition is necessary, *viz.*, that Peter and Paul's cousin Zebedee should have been *born at the same time*. Now in relativity, as we have seen, they were born at the same time by *Paul's* clocks, but *not* by *Peter's* clocks. This is the answer to the second question Lovejoy proceeds to ask: "Wherein, also, lies the respectivity of the assumed retardation?" The answer to the first question—"Where, then, is the ambiguity in the former proposition, or in [is?] the distinction between it and the latter?"—is that *both are equally ambiguous*, the latter more clearly so because stated more explicitly: it claims sufficiently to identify retardation by a characteristic that it shares with faster-running and with running at the same rate.

VIII. In my previous paper I began by charging Lovejoy with scrambling his eggs. He replies (in substance, but of course with more dignity): "Not guilty; it was the relativist fellow that did it".

Fortunately this reply furnishes us with an admitted *corpus delicti*: the eggs *were* scrambled. Let us see what in detail Lovejoy says the relativist did, and what in detail the relativist actually did do. Lovejoy says (p. 549) that the relativists presented a tale of a time-retarding journey "as a corollary of the Special Theory", and defended it "from the specific standpoint of that theory". In a footnote he refers to Born by page and adds:

> There are other examples, which I have not at hand where I write. It is true (as noted [in his previous paper] p. 159) that those who first deduce from the Special Theory *alone* * both the implication of a time-retarding journey, and also an ostensibly sufficient reply to the objection that the comparative retardation should be bilateral, usually add, when later setting forth the General Theory, that it is in this that the decisive reply to the objection is to be found.

I take it that Born, the only relativist here mentioned, is one of the relativists whom Lovejoy charges with actually doing this. The passage (Born, pp. 214–216) to which Lovejoy refers occurs in a context in which Born is discussing the Special Theory. It is too long for full quotation, but I must quote at some length from it.

> In the sequel we shall draw numerous *deductions* * from Einstein's theory . . . But here we wish to deal with an *argument* * which leads to particularly remarkable results. . . . We are referring to the so-called "clock-paradox".

The "argument" here mentioned may at first glance possibly be thought to be just one of the "deductions from Einstein's theory", *i.e.*, as Lovejoy puts it, "a corollary of the Special Theory". On the other hand, it is possible that Born did not intend it to be so regarded. We shall see. But meanwhile let me continue my quotation, intentionally garbling it, but also indicating by bracketed numerals the places where the garbling occurs.

> Let us consider an observer A at rest at the origin O of the [1] system S. A second observer B is at first to be at rest at the same point O, and is then to move off with uniform velocity along a straight line, say the x-axis, until he has reached a point C, when he is to turn round and return to O along a straight line with the same velocity. [2] this effect [*i.e.*, the effect of the acceleration involved] may be neglected. But then the clock of the observer B must have lost time compared with the clock of A after B's return to O. For . . . during the periods of B's uniform motion, which are the determining factors for the result, the proper time lags behind the time of any other [3] system.

VIII*a*. Taking this passage, even as it stands thus quoted, one might possibly object that "the Special Theory has *logically nothing to say* on the retardation involved in a journey *to and fro*. It makes no as-

sumptions whatever as to the effects of acceleration" (McG., p. 358). *Therefore*, no one, in discussing this theory, has a right to consider any case in which there *is* acceleration. Such a conclusion, however, would be a *non sequitur*. We must make a distinction between what a *theory* says, and what *some one discussing that theory* correctly says. My remark (pp. 358–359) about scrambling the eggs had reference to what Lovejoy said was "assumed *(in the Special Theory)*" *, not to what *Born* assumed in the passage under discussion. Take a parallel case: the Newtonian theory of gravitation has *logically nothing to say* about the effects of air-resistance on falling bodies. These effects have to be discovered by experiment; they cannot be deduced from the theory *alone*. But a physicist, in discussing that theory, may and often does consider a case in which a falling body encounters such resistance, and then say that, *if* that resistance is negligible, the gravitational equation $s = gt^2/2$ holds approximately for such a case. The theory of gravitation, having nothing logically to say about air-resistance, has *no denial logically to make* of the physicist's assertions, so long as he does not say something that contradicts what the theory *does* logically say. The same relation holds between what the Special Theory alone says and what a physicist says in discussing that theory. Let us see what *Born* says, when what is omitted at "[2]" in the foregoing quotation is restored.

> Let both observers carry with them ideal clocks which indicate their proper-time. The times lost in getting started, in turning round, and in slowing down on arrival at *B* [*O*] can be made as short as we please by making the times occupied in moving uniformly there and back sufficiently great. If, say, the rate of the clocks should be influenced by the acceleration, this effect will be comparatively small *if* * the times of the journey are sufficiently great. . . . But *then* * the clock of the observer *B* must have lost time compared with the clock of *A* after *B*'s return to *O*.

VIII*b*. It is clear, when attention is called to the words I have italicized, that Born does not deduce his results "from the Special Theory *alone*" * (L. p. 549) but from that theory *plus* the assumption that in *certain* cases the effects of acceleration are negligible; nor does he call his results a "deduction" (p. 216) *till this additional assumption has been made and utilized*. (This, I suggest, accounts for the change in the earlier passage from "deductions" to "argument". It also accounts—this is not merely a suggestion—for my saying (p. 359): ". . . or until we explicitly make some further assumption, we are *not* concerned" with a round-trip.) We thus see that Born did not confuse the Special Theory *alone* with the Special Theory *plus* an ad-

ditional assumption necessary for his "deduction". In any mathematical discussion no postulate that is employed may be ignored. But Lovejoy, in speaking of this "deduction" as "a *corollary* * of the Special Theory" deduced "from the Special Theory *alone*" *, has failed to distinguish, *i.e.*, he has "scrambled", what Born left unscrambled. This, however, is not his only scrambling.

VIII*c*. A much more serious garbling of the passage I have quoted from Born was my omission at "[1]" and "[3]" of just one word. That word was "inertial". Now, what is an "inertial system"? To answer this question we must first consider what the law of inertia is. Early in his book (pp. 27–28) Born says:

> In our experience we do not know of bodies that are really withdrawn from all influences from without. . . . For the present, then, we shall interpret the law of inertia in the restricted sense *in which Galilei meant it.**

He illustrates this law by a sphere resting at first on a smooth horizontal table and then given an impulse when

> it will continue to move in a straight line and will lose only very little of its speed. This retardation was called a secondary effect by Galilei, and it is to be ascribed to the friction of the table and the air. . . . The law of inertia is at any rate confirmed for motion on the table. It has been established that *in the absence of forces the velocity remains constant in direction and magnitude.** Consequently *the forces will be associated with the change of velocity, the acceleration.** In *what** way they are associated can again be decided only by *experiment.**

This is "the law of inertia in its original [Galilean] form", by which later (p. 62) Born defines an "inertial system":

> We must now alter the terms used in our definition of the principle of relativity, for in it we still spoke of a coördinate system at rest in absolute space, and this is clearly without sense physically. To arrive at a definite formulation the conception of *inertial system* . . . has been introduced, and it is taken to signify a coördinate system in which *the law of inertia holds in its original form.** There is not only the one system at rest as in Newton's absolute space . . . but *an infinite number of others.** . . .

Thus in relativity as interpreted by Born, an inertial system is one whose velocity relative to an infinite number of systems remains constant in direction and magnitude *because of the absence of forces.* This definition still holds—it has not meanwhile been modified—when in the same chapter with (and less than twenty pages before) the passage Lovejoy criticizes, Born derives the Lorentz transformation On beginning this derivation he says (p. 198):

We once more repeat the hypothesis of Einstein's *kinematics.** 1. *The Principle of Relativity.*—There are an infinite number of systems of reference (inertial systems) moving uniformly and rectilinearly with respect to each other, in which all physical laws assume their simplest form (originally derived for absolute space or the stationary ether).

But Lovejoy will have none of this (pp. 61–62); he says:

If the effect *is* unilateral, then . . . *either** the two systems are not in merely relative motion, *i.e.*, the so-called inertial system (the earth) is in a state of rest in an absolute space or with respect to some absolute reference body; *or else** the dislocations of objects on Paul's system are *not* consequences solely of the reversal of direction of relative motion with respect to the earth. The former alternative would take us back to the *Newtonian universe**: the latter might conceivably be brought under the well-known hypothesis of Mach about the nature of inertial forces. Paul's system would be affected differently from Peter's because its relations to the matter composing *the rest of the universe** would be different. It is unnecessary to ask here which alternative is preferable . . . it is assumed (in the Special Theory) that the *only** motion in question *is* the relative motion between the two systems. . . .

Could there be a clearer case of *petitio?* Lovejoy in criticizing Born uses a premise ("either . . . or") in direct contradiction to the principle under which Born was operating, which is *neither* Lovejoy's "either" nor Lovejoy's "or"[7]. Does Lovejoy do this because he has not read the whole book, or even the whole chapter, from which he takes a passage to criticize? or because in his eagerness to find fault he has forgotten what he has read and what if remembered would have given an entirely different meaning to the passage?

Immediately preceding the passage just quoted from Lovejoy, he mentions an argument urged in support of the unilateral character of the effects of acceleration: Paul's projectile, being shot from the earth, "*will* be jolted," and his clocks also.

The fundamental objection to this argument is . . . that the jolting could not conceivably be confined to Paul's system *if it were assumed that the acceleration (change of direction) is merely relative to Peter's system,* and therefore reciprocal. . . . To say that it is so confined would (upon these assumptions) be to say that precisely the same phenomenon . . . produced a given effect in one case and no effect in the other . . . when the other conditions remain invariant.

Of course. *If* the acceleration is merely a change of direction (or

[7] It is not "the matter composing the rest of the universe" that is under consideration in the motion of an inertial system. It is such matter as is in any of the infinite number of inertial systems with respect to which any inertial system under consideration moves uniformly. Whatever matter belongs to any other system can be dealt with in connection with the Special Theory only by *referring its changes to the systems that are by hypothesis inertial.*

of velocity or of both), then Paul cannot undergo any *such* change with respect to Peter without Peter's undergoing *ipso facto* a symmetrical change with respect to Paul. Thus *if* the jolting is due to *that kind of acceleration*, it must be reciprocal. But Einstein's kinematics, as interpreted by Born, whom Lovejoy is criticizing, presupposes, as we have seen, that its unaccelerated reference-systems are *inertial, i.e., not acted on by external forces*, and that *accelerated systems are acted on by such forces*. Lovejoy in the last-quoted passage presupposes that the Special Theory assumes that *purely spatial characteristics* (changes of direction, etc.) do the work that Born (with Einstein) attributes *to external forces*. Born had said, when treating of inertial systems (p. 62): "We here see clearly how intimately the problem of space is connected with mechanics. It is not space that is there and that impresses its *form* on things, but *the things and their physical laws determine space*." * A force is thus some physical *thing* that acts on some other physical thing according to physical laws; and an "accelerated" system is not merely one in which there are *just* speeds increasing (or decreasing), or just directions changing with the lapse of time. It is one in which these increases and these changes are determined by *things acting as forces*. And an inertial system is one on which things are *not* acting as forces.

As Born says, these "forces will be associated with the change of velocity, the acceleration. In what way they will be associated can again be decided only by experiment." Now it does not require a pre-relativist with his absolute space nor an astronomer with his celestial lore, to discover "by experiment" whether, when a glass of water is spilt on the table, it was the glass or the table that was "associated" with the force at work. Neither does it require a Newton or a Mach to discover "by experiment" whether, when the observer B gets parted from "the origin O of the inertial system S", it was B whose muscles (or vehicle) produced the separation or whether the system S slipped from under B's feet in a gigantic landslide. It is only in the *General Theory* that, when there is acceleration, *either* of the systems involved may be considered as inertial and the other as non-inertial. To appeal to a "reciprocity" of accelerated systems when criticizing a relativist who is dealing with a problem under the *Special Theory* (considered in connection with an additional assumption), is to "scramble the eggs" as Born does not scramble them. In the Special Theory there is no "reciprocity" between an inertial system and an accelerated system. In fact, Born expressly warns against such scrambling (p. 216), and Lovejoy has read the warning (L. p. 57); but he heeds it

not. His insistence that the characteristic feature of his first paper was its scrupulous care in keeping the eggs intact only proves his happy inability to recognize what logical scrambling is when performed in dealing with relativity.

VIII*d*. Lovejoy thinks it "a topsy-turvy sort of logic" that permits Born to attribute the retardation to *B*'s clock, which has been accelerated, and to withhold it from *A*'s, which has not been accelerated, in spite of the fact that "the occurrence of a retardation is inferrible only from the Special Theory", which "applies exclusively to inertial, *i.e.*, unaccelerated, systems" (p. 57). Here Lovejoy confuses a *reference-system* with *what is referred* to that system. When the tracks of a railway together with the land on which they lie are the reference-system of a railway, a passenger does not say, when suddenly jolted out of his berth at night, that it is the tracks and the land that suffered the jolt. The topsy-turviness belongs to the logic of the critic who should maintain that the traveller's shaken nerves should be attributed to the tracks, since the tracks are the reference-system used in the time-tables.

VIII*e*. But suppose that the effects of an acceleration are *negligible*. Does this not carry with it the supposition that we must also ignore the fact that there is acceleration that is due to forces? Lovejoy seems to require an affirmative answer when he says (p. 62):

> we must still conclude . . . (b) that if there *were* any retardation—*i.e.*, if the acceleration in question were treated as theoretically negligible—the comparative retardation inferrible would necessarily be reciprocal.

Whatever Lovejoy may mean here, the sentence as it stands reminds me of what I once heard Tommy say. Tommy had grossly slandered Jimmy, who in consequence had lost caste with the gang. But Jimmy was a real Christian and, when he next saw Tommy, told him that he forgave him, saying that the mischief done didn't matter. [He would have said it was "negligible" if he had known or remembered this word.] Tommy met Jimmy more than half way. "Fine!" he shouted. "Then we'll say it was *you* who lied about *me*, and that makes us all even." Tommy had evidently been taken by his mother to hear a popular lecture on relativity.

VIII*f*. If Lovejoy really wants "reciprocity" and "reversibility" between the clocks of *A* and *B*, he can get it, provided he grants symmetry to the conditions under which they separate and reunite. (No one can get something for nothing in physics, not even in relativity-physics.) To see this, let us make more specific the way in which in

Born's set-up B moved from O. Let us say that in Born's set-up B moves from O in the *positive* x-direction relatively to the inertial system S, and returns in the negative x-direction; and let us call this "set-up (1)". Now (2) let us reverse this set-up, by having A move from O in the inertial system S, and by having B left stationary at O. A's motion from O is to be in the *negative* x-direction, till he reaches a point D, whose distance from O is equal to the distance of C from O in set-up (1). At D, A is to turn round and go back to O in the positive x-direction. In all other respects this second set-up is to be similar to the first. By Born's reasoning, it is A's clock that on his return to O has lost time compared with B's—of course mere difference in direction makes no difference in the results of motion.

Now let us combine the two set-ups. *Both A and B* are to set out from O, leaving a clock stationary at O. (There is no limit in relativity to the number of available clocks.) B is to go from O in the positive x-direction as in set-up 1, and A in the negative as in set-up 2, each returning in the respectively opposite direction. When they meet again at O, the clocks of *both* (again by Born's logic) will have lost time compared with—*what? With each other? No! Both clocks will have lost time equally, compared with the clock left stationary at O.* Thus Lovejoy will have his "reciprocity" and "reversibility" since the relation of equality is symmetrical, and can be reversed and reciprocated without a single bat of even a meticulously logical eye.[8]

In my former paper, instead of assuming that the results of acceleration are negligible, I assumed that the acceleration involved had "*no* disturbing effects . . .[9] other than that after" the acceleration physical

[8] If Lovejoy, in his examination of Einstein and other "mathematical expositors of the theory", has found that they all "agree that *in any possible case* of such a journey", travellers, born at the same place and time, and returning to that place after wayfaring, "would *not* be 'of equal age physiologically'" (p. 553), this can only be because he has not read these mathematical expositors *mathematically*. The very equations (or Minkowski diagrams) these expositors use in discussing a to-and-fro journey in connection with the Special Theory are, by hypothesis, applicable only to journeys with respect to some inertial system. When two travellers move symmetrically with respect to such a system they will undergo similar changes with respect to clocks in that system. In reading mathematical writers, it is always profitable to pay attention to their definitions, their postulates, and their equations, and not merely to *some particular instance* in which their reasoning is illustrated.

[9] Lovejoy rightfully disowns the "violent supposition" I imputed to him. This imputation was a mistake, which I regret and for which I sincerely apologize. I must assume sole responsibility for the supposition. Fortunately for my argument, if not for my accuracy, the mistake does not impair the logic of my discussion.

processes should "carry on just at the same rate" as required by their new uniform velocity (p. 375). The reason I employed this assumption was that I thought that by it I could more definitely eliminate everything except what happens during periods of uniform motion. In the case where only one traveller reversed his direction I got exactly the same result Born got. In the case where both travellers reversed their directions I got the result Born would have got had he assumed that both A and B moved away from the origin O of the inertial system S, their motions relative to that system being completely symmetrical.[10] When Lovejoy says that my "equations yield a result precisely opposite to that to which the equations of Einstein and other mathematical physicists lead them, on this point" (p. 554), his assertion can be condoned only on the assumption that he does not know to what those equations actually do lead. Will Lovejoy by the use of equations show the correctness of his charge?

VIII*g*. But there is still another objection that Lovejoy makes to my conclusions: I get "opposite results for . . . two instances of precisely the same kinematic phenomenon" (p. 555). The reason he says that there is no "kinematically relevant difference" in the two cases is that the "relative speed" in the two cases is equal. I am willing to grant for the sake of argument (since the point is irrelevant) that in classical kinematics the two instances would be identical in character. But I was and still am "unaware of my self-contradiction" because I thought and still think that I was dealing with *relativistic* kinematics. Any kinematics is precisely stated only in terms of its definitions, its postulates, and its equations. It so happens that there are very great differences between relativistic and classical kinematics. Now whatever classical kinematics may say of our two instances, relativistic kinematics has to maintain that where only one traveller reverses his direction relatively to another system with respect to which he has previously been in unaccelerated motion, we have an entirely different kinematic situation from that in which two travellers thus reverse their direction. It must be remembered that the basic relative speeds that the Special Theory deals with are speeds relative to some inertial system or systems. When Peter takes John's platform to get back to Paul (McG. pp. 375–376), his speed relative to the inertial platform he

[10] By referring to Born's Minkowski diagram (p. 215) the reader can see that Born would have got the result I got. Draw in that diagram to the left of the t-axis another dotted line, symmetrical with the dotted line there shown, the symmetry being with respect to the t-axis. The two dotted lines are thus equal, and what is true of Born's own line is also true of the line now added.

has left is (by the relativistic Theorem of the Addition of Velocities) $2v/(1+v^2/c^2)$, whereas Paul's speed relative to his own platform remains zero. When both Peter and Paul reverse their directions by transfer each to the other's platform (pp. 274–275), the speed of each relative to the platform he has left is v. A mere glance at these numbers will suffice to convince any one that the two instances are not kinematically identical. Here again Lovejoy is misled by his belief that what he calls "the classical principle of the relativity of motion" controls every relativistic transaction. If Lovejoy could only bring himself to try to *understand* relativity before using his "critical faculty" on it American philosophy would be much 'forwarder'; for all of us recognize the keenness of that faculty when it has chosen to exercise itself on appropriate material, *i.e.*, on what it understands. When on the contrary it tries its teeth on what it does not understand, it degenerates into mere cavil.

IX. I must repeat what I have been constantly emphasizing. One cannot understand a mathematical theory without approaching it *as* a mathematical theory, *i.e.*, as a theory with its own definitions, its postulates, and its equations. Such a theory says just what and only what its equations say, not what a critic says who approaches it with other postulates and other definitions and without equations. The reason I have been interested in calling attention to Lovejoy's critical methods in his dealing with the mathematical theory of relativity is that his criticism of this theory is motivated by a desire to erect his epistemological dualism on its ruins. The last paragraph of his "reply" shows this clearly to any one who may not have already discovered it from the reading of *The Revolt against Dualism*. Now criticism of a philosophical view is often criticism that cannot be brought to book for the reason that what is criticized cannot be so precisely formulated in all its details as can be done with a mathematical theory. But criticism of a mathematical theory is different. A critic who cannot handle the logic of a mathematical theory he attacks can hardly be trusted as competent to deal with a philosophical view whose logic is in many respects that of the mathematical theory. Not being an epistemological dualist in Lovejoy's unrestricted meaning of that term, I consider it fortunate that he has ventured so unhappily into the mathematical field where the limitations of his logic become manifest. In dealing with the present-day variety of philosophical views, a critic needs, not the ability to make two hairs grow (by splitting) where only one grew before, but a sympathetic discernment, which is only etymologically suggestive of splitting.

The reader will have guessed why I have declined to follow Lovejoy into the General Theory. Either he does not, or I do not, understand the *Special Theory*. In either case the one who does not understand can hardly be expected to contribute to a profitable discussion of a more advanced and more difficult theory which presupposes the one misunderstood.

P.S. After having corrected the proofs of this article I received those of Lovejoy's reply which follows. I had not seen this reply before, and it is obviously impossible now to do justice to it. However I will select two or three points at random to comment on.

If my argument "divagates into several side-issues," that is because these issues were brought forward as critical in Lovejoy's previous papers.

Lovejoy lays down as Proposition IV: "The two clocks may legitimately be supposed to be set in motion, and the two persons born, at the same time." As applied by Lovejoy to Peter's birth at A' and Zebedee's at P, these points not being coincident, this proposition asserts what the Special Theory denies, *viz.*, a simultaneity at a distance common to two relatively moving systems. He justifies his assertion by saying: "there is no reason why a clock at P' should not be *set* going with the same reading as the clock at P, when these clocks are coincident." Of course one *can* set a clock going with any reading, but if one is to set it so as to be synchronous with some other clock at some other place, there is only one reading that one *may* give it. Lovejoy's arbitrary choice of setting, from which he gets his desired result, is at variance with relativity, and therefore his result does not show any inconsistency in relativity. Lovejoy's proof that there is a common simultaneity at a distance for the two platforms is given in just one sentence: "And $t = 0$ cannot be the same moment as $t' = 0$ at A (which $= A'$) but a different moment at P." This assertion when applied to both platforms is an assertion of what relativity denies, and therefore does not disprove the correctness of that denial. Lovejoy says: "McGilvary's argument for the non-simultaneity of their births [i.e., the births of *Peter* and *Paul*] has therefore no relevance." Neither has this statement any relevance, since I have never denied the simultaneity of *these* births. On the contrary my argument assumes that they are simultaneous on both platforms.

And so forth and so forth.

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THE TRAVELS OF PETER, PAUL, AND ZEBEDEE

THE foregoing reply of Professor McGilvary is somewhat random in its arrangement and divagates into several side-issues, some of them chiefly of a personal interest. It is therefore likely to obscure rather than make clearer for the reader the nature of the main philosophical question under discussion and the general logical outline of the reasoning against which the reply is directed. It becomes needful, then, if the discussion is to reach any definite outcome, to restate the main question and to recapitulate in a connected way my argument with respect to it. I shall then proceed to examine whether McGilvary has successfully controverted any of my essential premises or shown that the conclusion which I have propounded does not follow from them.[1]

A. The gist of that argument consists of the following propositions:

I. Retardations of clocks and of physiological processes are, in the special theory of relativity, said to occur in any system S which is in unaccelerated motion relatively to another system, S'. II. These retardations are comparative; *i.e.*, the rates of standard clocks and of physiological processes in S are said to be slower than those in S'. III. But since both S and S' can equally legitimately be said to be in equal unaccelerated motion relatively to one another, equal retardations must be ascribed to the clocks, *etc.*, in *both* systems. IV. The two clocks may legitimately be supposed to be set in motion, and the two persons to be born, at the same time. V. If (as is implied by the story of the twins-of-unequal-age) the comparative lags, or retardations, are supposed to occur as physical facts in the systems to which they are referred, the foregoing propositions lead to the following contradictions: 1. The clock in each system goes more slowly than that in the other, and the person in each system ages less rapidly than the other person. (This follows from I–III alone.) 2. The reading of each clock, on S and S' respectively, will be slow in comparison with the other at the same moment, and each of two persons will be physiologically younger than the other at the same time. 3. Each clock will thus have two readings at once, and each person will be of two ages at once. VI. If, however, the retardations and resultant inversions of ages and readings are regarded, not as physical facts in the systems to which they are referred, but merely as a "mutual disparity of appearances" —*e.g.*, if the retardation of the clock or of the physiological age in S

[1] The previously published papers in this discussion will be hereafter referred to as L. I, McG. I, and L. II.

is held to exist only for, or from the point of view of, observers in S' —*these* contradictions do not arise. (I do not discuss the question whether no others remain.) The contradictions in V, 2 and 3, were, further, said by me to arise (upon the supposition mentioned) in either of the two possible cases: *i.e.*, V, *2a*. if the two clocks are, at the moment under consideration, *at the same place*, there will be a simultaneous reciprocal inversion of *coincident* clock-readings, and of the ages of persons at that place; V, *2b*. if the two clocks, or persons, in their respective systems, are, after a period of relative motion, at points distant from one another, there will be a similar mutual inversion of readings or of physiological ages at the same time but not at the same place. *2a* is the case in which the unaccelerated relative motion is a motion of approach, *i.e.*, in which the two clocks or persons start at a distance from one another and eventually meet; *2b* is the case of a motion of separation, in which they start from the same place and (since the motion is by hypothesis unaccelerated) do not return to one another. *Mutatis mutandis*, *3a* and *3b* correspond to *2a* and *2b*, and are corollaries of them.

How many of these propositions does McGilvary accept? I and II are undisputed. It might at first reading be inferred from some of his remarks about "reversibility" that he disputes III; but in fact, of course, he does not do so. If Peter and Zebedee, on their respective moving platforms, are supposed to start from distant points, A and P', then, says McGilvary, it is true (as I had observed) "that, according to the special theory, the comparative retardations arising while they continuously approached one another would be bilateral and equal"; this is "one of the best-known articles of the relativist's creed".[2] There *is*, in short, a "*mutual* lag". McGilvary's objections relate to

[2] *Cf.* also McG. I, p. 371: Postulating certain values for the variables in the equation, "*measured by the synchronism of Paul's clocks*, any one of *Peter's clocks* loses time, in going from any point to any other point of Paul's platform, at the rate of 7 seconds in every 10; *i.e.*, it runs only 3/10 as fast as Paul's clocks; *measured by the synchronism of Peter's clocks*, any one of *Paul's* clocks loses time, in going from any point to any other point of Peter's platform, at the rate of 7 seconds in every 10; *i.e.*, it runs only 3/10 as fast as Peter's clocks." What is, in McGilvary's paper above, called "Zebedee's clock" is "one of Peter's clocks". The reader will observe that this mutual lag results from the application of one of the transformation-equations, and that since McGilvary has himself made the computation, it is unnecessary that I should repeat it. But *this* "result of the equations" is fundamental in my argument; the rest consists in an analysis of the meaning of certain concepts employed in the theory and in pointing out that McGilvary's own computation asserts (as well as denies) the simultaneity of the birth of Peter and Zebedee.

the propositions under IV and V; and the principal part of his argument has to do with IV, *2a*. It is with these issues, then, that I shall deal. It will be observed that if it is shown that *any one* of the contradictions under V can be shown to follow from the theory—together with the assumption of the physical reality of the retardations—the general conclusion of my previous papers is established.

B. My Proposition V, 1 relates, not to the comparative readings of the two clocks or the ages of the two travellers at a single moment, but to the rates at which clocks go and physiological processes take place during the *period* in which the clocks or bodies are in unaccelerated relative motion. And this proposition follows directly from, or rather is equivalent to, Proposition III, which is admitted. Now if this mutual lag is conceived to be a physical fact, if each clock *really* goes only 3/10 as fast as the other during the same period, Proposition V, 1 is, I submit, a contradiction; though it is not a contradiction if each clock is merely judged by observers on the other platform to go at this comparative rate. To say that throughout a common duration the S-clock actually goes more slowly than the S'-clock and the S'-clock goes more slowly than the S-clock, and therefore that each also goes faster than the other, is as contradictory as to say that, at a given moment, each clock *is* slow in comparison with the other. And if it be suggested that there is no common period during which both clocks are going and moving, I reply that this is equivalent to saying that they are *not* in motion relatively to one another. To predicate relative motion of them is to assert that *while* one of them is becoming nearer to the other, the other is becoming nearer to it.[3] This "article of the relativist's creed", then, can be saved from contradiction only if the mutual lag is construed as merely apparent.

C. I pass to Proposition V, *2a*. In the concrete hypothetical case assumed by both of us, Peter is born at A' on the S'-platform, at a time when A' is coincident with A on the S-platform; and Zebedee is born at P on the S-platform (opposite P' on the S'-platform). The platforms are already moving; and each traveller from the moment of his birth is in an unaccelerated motion of approach relatively to the other. Also, at the moment of the birth of each, a standard clock is set going beside him, and accompanies him throughout his journey. Both travellers and clocks, on their own platforms, remain throughout at A' and P respectively. We may also assume an observer, Batholomew, who remains at point P'. When A' and P become (virtually) coincident, the two clocks are said to be "in the same place". Supposing

[3] With this last point I shall deal further under *D*.

that the mutual retardations are construed as physical facts, does it follow that *at this place* Peter's clock will be slow in comparison with Zebedee's and Zebedee's slow in comparison with Peter's by the same amount, and that Peter will be physiologically younger than Zebedee and Zebedee younger than Peter by the same amount?

McGilvary denies that (according to the special theory) there will or can be such a mutual inversion of coincident clock-readings, and of ages at the same place. His reason for denying it (repeated in many passages and in varying phrase) is that (*i*) this consequence does not follow from Propositions I, II, and III *alone;* (*ii*) that it would follow only if Peter and Zebedee could be born, and their clocks set going, *at the same time;* (*iii*) that, upon the principles and equations of the special theory, it is inconceivable that the two infants should be born, or the two clocks set going, at the same time. He also represents me as maintaining that the consequence *does* follow from Propositions I, II, and III alone. He asserts that I ignore the distinction between "the comparative retardation ('lagging') of a clock, and the comparative smallness ('slowness') of its instantaneous reading". Though the distinction, he rightly intimates, is obvious to the meanest intelligence, he assures the reader that I "labor under a most amazing and insistent confusion" on the point, since I reason directly "from the fact that in relativity there is a reciprocal lag to the conclusion that there is a reciprocal slowness of coincident clock-readings".

I reply that I have never "confused" the two ideas in question and do not argue in the way in which McGilvary says that I do. What I have said, and am now obliged to repeat, is the following: if two clocks on two platforms in relative motion are *set going with the same reading,* say 12 o'clock, *at the same moment,* and if either of them thereafter continuously lags in comparison with the other, this will *result* in a difference between their readings when, at any given subsequent moment, they are compared: the reading of the clock that has lagged will necessarily be "slow" or "smaller"; and if each lags equally in comparison with the other, the reading of each at any such moment will be "slow" in comparison with the other's. The simultaneity of the starting of the clocks (and of the births of the infants) and the initial identity of the readings of these clocks were explicitly and repeatedly specified as premises of the argument to which McGilvary is here referring.[4] I offered a proof of this premise, *i.e.,* of Proposition IV; and it was solely from Propositions I, II, III, *and* IV that I deduced the consequence which he denies. Whether that proof

[4] See, *e.g.,* L. II, pp. 560, 561.

is valid I shall consider in the next section; but it is a gross perversion of my argument on this point to give the reader to understand that Proposition IV was not an express part of it, and therefore to represent me as confusing the two conceptions mentioned. McGilvary, moreover, is aware that Proposition IV was set down by me as an essential premise of the argument for V, 2, and therefore that I distinguished the two questions; for in another passage above he writes: "Lovejoy . . . acknowledges that the establishment of proposition (2) presupposes the establishment of proposition (1)." In the numeration of my preceding paper, to which he is here referring, "proposition (1)" is the same as that which I have designated as "Proposition IV" in the above résumé of my argument as a whole, and Proposition (2) is the same as V, 2.

D. The issue concerning Proposition V, 2*a* thus resolves itself into the question of the validity of Proposition IV; in other words, McGilvary's thesis that there is no "reversibility of coincident clock-readings" (or physiological ages) depends wholly upon the proposition that Peter and Zebedee—being on different moving platforms and at distant points—cannot, on any relativistic principles, conceivably be "born at the same time".[5] I have shown, and shall again show, that this proposition is false—that the relativist must, and constantly does, make assumptions which imply the possibility of what McGilvary, to justify his case, is compelled to declare to be impossible. The *particular* supposition that the two events of Peter's and Zebedee's births can occur simultaneously at A' and P on their respective platforms, can, obviously, be excluded only on the general ground that, in a relativistic universe, *no* two distant events on different moving bodies can be simultaneous. Now it is true that Einstein has sought to prove—

[5] This can most plainly be seen at McG. I, p. 370. McGilvary there computes that, in spite of the fact that each clock during their relative motion goes only 3/10 as fast as the other, *Zebedee's* clock will not, at the moment of their meeting, be slow in comparison with Peter's—the reason being that the clock at P' has a reading 212⅓ seconds less than Zebedee's, at the moment of the coincidence of P with P', and that Peter's synchronized clock at A' therefore will, at that same moment on Peter's platform, be correspondingly behind Zebedee's. This slowness of Peter's clock at the start more than offsets Zebedee's comparative lag. It is to be observed, however, that there is no reason why a clock at P' should not be *set* going with the same reading as the clock at P, when these points are coincident, and no reason why, at what McGilvary admits is the same moment on Peter's platform, Peter's own personal clock at A' should not be set going with the same reading as the clock at P'. This consideration is equally fatal to McGilvary's argument; but for the sake of brevity I do not develop it here.

though by arguments which I have elsewhere, I think, shown to be unconvincing—that no *pair* of events on *one* platform which are found by observers on that platform to be simultaneous with one another can conceivably be regarded as simultaneous with one another by observers on the other platform. That this (whether true or not) is a "genuinely Einsteinian premise" I have already recognized.[6] But it is not equivalent to a proof that no two distant events on *different* bodies, or in different systems, can be simultaneous; and it is the latter proposition that I assert to be inconsistent with the theory of relativity. The reason why it is lies in the fact that the two bodies in question are assumed to be in relative motion; and that to say "two bodies are in relative motion" is to say (among other things) that there is a series of moments identical for both, and therefore the possibility of a corresponding series of simultaneous events occurring on the two bodies.

For—as I have previously pointed out—the two bodies can conceivably be in relative motion only during a "common while". Distance, or spatial separation along a common axis, is a symmetrical relation; and a change in this relation between the two cannot occur in the case of one of them unless it at the same time occurs in the case of the other. One body cannot start to become nearer to the other unless the other at the same instant starts to become nearer to it; if the latter is denied, it is *thereby* denied that any relative motion between them has begun. McGilvary now grants that for the relativist there is a common while. Such a common while is, *e.g.*, "the time-interval between the births of Peter and Paul at A and A' and the arrival of Peter at P", where he meets Zebedee. But McGilvary adds that in relativity theory this time-interval does not have "the same measure on the two platforms". It does not, of course, have the same measure for observers on the opposite platforms; if it did there would be no retardation in any sense. But he apparently supposes that there are "common *moments* on the two platforms" only for events which occur at coincident points. But if the "common while" is admitted, the restriction of common moments to events occurring at coincident points is inadmissible. "Whiles" contain "whens"; and if the time-interval between Peter's birth at A, and his arrival at P, is common to both systems (as we have seen that it must be) there must also be throughout this interval a sequence of common moments. It must be possible to say—and plainly *is* said by the relativist, in the very act of asserting relative motion of Peter and Zebedee—"*Now*, at the common moment m_1, the mutual approach of Peter and Zebedee

[6] *E.g.*, L. II, p. 559.

is beginning"; and again: "*Now*, at the common moment m_2, Peter is nearer to Zebedee, and Zebedee is reciprocally nearer to Peter, than at m_1"; and so on, until he can say: "*Now*, at moment m_n, Peter and Zebedee have reached the same place, *i.e.*, A' and P have become coincident." This community of moments is similarly implicit in the notion of comparative retardation. Peter's clock and his physiological age are not supposed to get their retardation all at once, at the instant of their arrival at P. Unless there are before that instant times at which it can be meaningfully said: "*Now* the ratio of Peter's age to Zebedee's is no longer the same as at the moment of his birth", the assertion of the actual retardation of Peter's physiological processes in comparison with Zebedee's in the course of his motion can have no meaning whatever.

The major premise necessarily presupposed by the proposition that Peter and Zebedee cannot be born at the same time is, then, plainly inconsistent with the theory of relativity; for it is tantamount to the proposition that both relative motion and continuous comparative retardation are inconceivable. This I had, as I supposed, already made clear; but as McGilvary seems to have hitherto been unable to grasp the point, I have been compelled to repeat it here somewhat more fully. McGilvary has—with some relativistic physicists—failed to ask himself the question: *What precisely is meant by relative motion?* This concept is obviously fundamental in the theory; and it is peculiarly in the province of the philosopher to insist upon a definition of it, or to make fully explicit the definition which is plainly presupposed by those who employ it. To neglect to do this is a singular piece of *philosophical* naïveté. When the question is asked and answered, it becomes evident that the relativist is completely committed to the admission that events at distant points on different plaforms can really occur simultaneously and that therefore there is no reason why the births of Peter at A' and of Zebedee at P should not be supposed to occur simultaneously—that is, at one of the "common moments" during the time-interval in which the two platforms are in relative motion. And when this is recognized, it becomes evident that the foundation of McGilvary's entire argument—on the present issue—collapses.

The identity of the times of birth of Peter and Zebedee can also be shown in another way, from McGilvary's own admissions. Peter is admittedly born at A' simultaneously with the birth of Paul at A; and Paul's birth is admittedly simultaneous with Zebedee's birth at P. That the "connotation" of simultaneity is the same in both cases

McGilvary again agrees.[7] To the proposition which, as I had pointed out, directly follows from these admissions—*viz.*, that two events which are in the same sense simultaneous with the same event are simultaneous with each other—McGilvary offers no real reply and no specific denial. He does, indeed, reiterate his previous argument that Zebedee's birth cannot be admitted by a relativist to occur at the same time by Peter's clocks as by Paul's. But he neglects to meet *my* previous argument.[8] If (as he grants) Zebedee's birth occurs at $t = 0$, and Paul's birth occurs at $t = 0$, and Peter's birth occurs at $t' = 0$, and t' and t are the same moment—then Peter's birth occurs at $t = 0$, *i.e.*, his birth and Zebedee's occur at the same moment. And that this t' and this t are the same moment is expressly declared: "A and A' are to coincide on January 1, 1900, exactly at noon, which is to be *the zero hour for both systems;* thus Paul's clock at A has *then* the reading $t = 0$, and Peter's clock at A' the reading $t' = 0$".[9] Obviously two points cannot be coincident at separate moments. And $t = 0$ cannot be the same moment as $t' = 0$ at A (which $= A'$) but a different moment at P; nor does McGilvary assert that it is. If an "*intelligent* observer" at P knows that the time of Zebedee's birth there "exactly at noon" is simultaneous with Paul's birth "exactly at noon" at A, and that Paul's birth at A and Peter's at A' are happening at that identical place at the same time by both of these coincident clocks, he also knows that all three births are happening at once, though at two different places. There is thus no way in which the simultaneity of Zebedee's birth with Peter's can be denied without denying McGilvary's initially assumed simultaneity of Paul's birth with Peter's—which in turn cannot be denied to be a legitimate assumption unless it is also denied that it is possible for the points A and A' ever to be coincident. Now this argument must be met *directly*, not by pointing out *other* relativistic theses with which its conclusion is inconsistent; "for such latent inconsistencies in the theory", as I have already remarked, "a critic of it is not responsible". But no attempt to meet it directly has been made by McGilvary—no doubt for the excellent reason that none is possible.

[7] McG. I, p. 363, and again above.

[8] L. II, p. 558.

[9] McG. I, p. 363: my italics. In his present paper McGilvary remarks that I "get my conclusion only on the assumption that what occurred at time $t = 0$ on Paul's platform also occurred at time $t' = 0$ on Peter's platform". But he has himself repeatedly assured us that this assumption is true. The reader should perhaps be reminded that he is not to understand from the use of the term "zero-hour" that the platforms are not already in motion at the time in question.

But though he fails to join issue with the crucial proposition that events simultaneous with the same event are simultaneous with each other, he does attack in other ways the argument that Peter's and Zebedee's birth may be and, given the initially accepted hypothetical situation, must be simultaneous. His objections are four in number.

i. One of them is put thus: "A proof that *a* cousin of Paul's may be born at P at the time mentioned, is no proof that this possible cousin is '*the* cousin' who was by hypothesis born at time $t = 0$ by Paul's clocks", *i.e.*, at the time when A was passing A' and Peter and Paul were being born at A' and A respectively. The exquisite pointlessness of this remark must, I suppose, be plain to every reader. We are dealing with a hypothetical situation. Any *kind* of event may, so far as the theory of relativity is concerned, conceivably occur at the point P on Paul's platform, at the time $t = 0$ by the synchronized clocks on that platform. There is consequently nothing to forbid us to suppose that an infant is born there at that time—any more than there is anything to forbid us to call that infant, for convenience of reference, "Paul's cousin Zebedee". That Zebedee, then, is born at P at that moment, is a permissible part of the hypothetical set-up.

ii. My second fallacy in this matter is, it seems, a *petitio*: I "*assume* a simultaneity-at-a-distance which is common to the two platforms". I do not "assume" this; I have proved, in the previous paper and again above, that it is and must be assumed by the relativist, and is assumed by him for two distinct reasons. There is therefore no *petitio*.

iii. McGilvary's third objection here is based upon the observation previously mentioned, that the "measure" (in terms of clock-readings) of the time-interval between two events on Zebedee's (or Paul's) platform will not be the same for observers on Peter's platform. To this I have already replied. McGilvary now, however, adds to his previous irrelevance on this matter the remark that "the lack of common measure" does not "make relative motion impossible". This is equally irrelevant, since I have never suggested that it does make relative motion impossible. What I have asserted is that the denial of common moments of occurrence of events on the two platforms would make relative motion inconceivable.

iv. McGilvary's principal indirect argument on the point runs as follows: If we suppose an observer at P', this observer will, according to the transformation-equation for time, find that Zebedee's birth occurs, not at time $t' = 0$, but at time $t' = -212\ 1/3$, *i.e.*, that number of seconds (or hours, or years, according to the units assumed) *earlier*

than the time of Peter's birth, *viz.*, $t' = 0$, or "12 o'clock". Let us assume that, given suitable values for the variables, the transformation-equation would yield this result. Does this invalidate my foregoing argument and therefore show that Zebedee and Paul could not be born at the same time? It does not, for the following reason. By McGilvary's own statement, already cited, $t' = 0$ and $t = 0$ are the same moment; and Peter is born at $t' = 0$ and Zebedee is born at $t = 0$, in short, both are born at the same moment. If the equation shows that Zebedee is *not* born at $t = 0$, or that $t' = 0$ is *not* simultaneous with $t = 0$, we are simply confronted with a contradiction in the theory—and in McGilvary's argument.

McGilvary's fundamental error in this argument arises from the fact that he has not really reflected upon the consequences—on relativistic principles—of the admittedly legitimate hypothesis of the two adjacent parallel platforms in unaccelerated relative motion. He recognizes two separate groups of events, simultaneous on the two platforms respectively, *i.e.*, by Peter's and Bartholomew's synchronized clocks, and by Paul's and Zebedee's synchronized clocks. And he tells us that this simultaneity of clocks synchronized by light-waves on the same platform is "the invariable connotation of 'simultaneity' in the special theory". But it notoriously isn't. The special theory also recognizes that two events *occurring together at the same place* are simultaneous, apart from the procedure of distant-synchronization by light-waves.[10] And two events may thus occur together at the same place *on different moving platforms*, if the platforms are immediately adjacent; this is recognized by McGilvary himself when he grants that Peter and Paul may be born at the same place at the same time, *viz.*, at the time when their birth-places, A' and A, are momentarily coincident. There is, then, a *cross-simultaneity between the two platforms*; $t = 0$ and $t' = 0$ are temporally identical. The attempt at a rigorous segregation of the groups of events on the one platform and on the other thus breaks down, when the platforms are in immediate juxtaposition. The synchronism on the one becomes entangled with the synchronism on the other. For it is not asserted by McGilvary—or by Einstein—that the one word 'simultaneity' stands for two opposite kinds of temporal relation.

It will perhaps be suggested that the relativist ought to assert this

[10] This is elsewhere admitted by McGilvary; *cf.* McG. I, p. 363: "Events that occur simultaneously at coincident points on our two platforms are simultaneous on both platforms." There is, indeed, only one *connotation* of simultaneity, but there are two classes of cases in which it is exemplified and verifiable.

and thus maintain that Peter and Paul, and Paul and Zebedee, were not born at the same time in the same sense. But this could hold good only if the clocks on Paul's platform were not truly synchronized. When A and A' are coincident, clocks or stop-watches at each point may obviously be set going with the same reading; McGilvary himself assumes that both clocks there have then the reading of 12 o'clock. This is the moment of Paul's birth; it is admittedly also the moment, on Paul's platform, of Zebedee's birth at P. This means that, if P is 100 light-seconds distant from A, and if at the instant of Paul's birth a light-ray is emitted from A, it will reach P 100 seconds after Zebedee's birth, by any clock situated at P, and, if reflected back, will return to A 200 seconds after Paul's birth. A relativistic observer at A, knowing the distance from A to P and learning that his light-ray reached P 100 seconds after Zebedee's birth there, must necessarily say to himself: "Since the light-ray really travels along my platform (or any other) with a constant velocity, and since by the accepted test of synchronism it is shown that Zebedee was born at the same time as Paul, it is clear that he was born at the same time as any other event occurring at A when Paul was born there. But Peter's birth occurred at A when Paul was born there; for A and A' were then coincident, *i.e.*, were separated only by a minimal distance which the theory treats as negligible. It is true that the light-signal returns to me here at A at a moment which is not that of the birth of either Peter or Paul, and that Peter is no longer here. But I am not asking whether Zebedee's birth is simultaneous with an event which occurs at A 200 seconds after Paul's birth; I am asking whether it *was* simultaneous with an event which occurred at the same place as Paul's birth at the moment of that birth; and Peter's birth *did* occur at that place at that moment. If the test by light-signals from A to P on my platform shows Zebedee's birth to have been simultaneous with Paul's, it also shows that, by the same test and therefore *in the same sense*, Zebedee's birth was simultaneous with Peter's."

It may, however, be objected that this demonstrated univocal simultaneity of the births of Peter and Zebedee holds good, so far as the reasoning in the preceding paragraph shows, only for observers on Paul's (and Zebedee's) platform. But it is to be borne in mind that the thesis which McGilvary is defending is that the readings which observers at A or P ascribe to Peter's clocks, and the ages which they impute to him, are the actual readings and ages on Peter's platform, *i.e.*, are identical with those which are observed by Peter himself, or (at his birth) by an observer beside him; the same is declared to be

true for observers at A' and P' with respect to Paul's and Zebedee's clocks.[11] It follows that since the observers both at A and A' find $t=0$ and $t'=0$ to be identical, the births of Paul and Peter will be *really* simultaneous. Moreover, the clocks on Peter's platform are also synchronized or synchronizable. This means that, by Peter's time-measurement on his own platform by means of light signals, at every point thereon some event can be shown to have occurred at a moment identical with the moment $t'=0$ at A'. But the moment $t'=0$, which is thus *a single moment for all points on Peter's platform,* is admittedly simultaneous at point A' with the moment $t=0$, which is similarly a single moment for all points on Paul's platform. But Zebedee is admittedly born at P at the moment $t=0$. And at $t'=0$ (*i.e.*, at $t=0$) some point on Peter's platform must be actually coincident with P, since we may suppose the platforms to extend as far as we like from A' and A respectively; and P' is simply the name we have chosen to give to that point. Hence at that moment an observer at P' will *see* that the reading of Zebedee's clock there is $t=0$, and that Zebedee is then just born there. Thus the two observers on Peter's platform, on pooling their information, will find that Peter, by their synchronized clocks, was born at time $t'=0$, and by Paul's synchronized clocks at $t=0$, and also that Zebedee was born at $t'=0$ by their clocks and at $t=0$ by Paul's; *i.e.*, they, as well as the observers on the other platform, will find that Peter and Zebedee were born at the same time.[12]

Now I am not contending that McGilvary's argument with respect to the non-simultaneity of the births of Peter and Zebedee has no basis in the theory; as I had already remarked, McGilvary is here "employing a genuine Einsteinian principle. . . . His reasoning, so far as it goes, is relativistically orthodox."[13] What I have maintained is that on equally good and equally relativistic grounds it can *also* be shown that Peter and Zebedee *would* be born at the same time; and this I have again demonstrated in the foregoing paragraphs. My contention throughout has been that there are *contradictions* in the theory—when the assumption is made that the readings or ages ob-

[11] McG. I, p. 368: "There is no disagreement as to what is directly observed by competent observers at any two coincident points"; p. 365: "Both observers at P and P' actually *see* the readings of both clocks."

[12] It is *not* assumed in this argument that Peter's observers will find the distances A–P and A'–P' equal. If it seems to any reader that there is a contradiction in this, I ask him to observe that it is not *my* contradiction, but is inherent in the theory.

[13] L. II, p. 559.

served and computed from one platform are the actual readings or ages on the other. This, the essential point of my argument, seems to have eluded McGilvary completely; for all that he has attempted to do in his reply (on this point) is to prove over again that *one* of two contradictory consequences of the theory follows from it. In so far as he has done this more elaborately than I had, he has simply strengthened my case. He does not spare protestations that I have completely misunderstood the special theory. I am able to reply, in this case, in more complimentary terms. He understands very well certain of the characteristic and familiar implications of the theory on the present question; but to other less advertised, though scarcely less obvious, presuppositions and consequences of it he remains persistently blind. And what he calls my misunderstanding consists, I venture to suggest, in a recognition of these latter implications and of the fact that they are in conflict with those which *he* recognizes. A proof that they are involved in it is not rebutted by showing—what is not denied—that the others are also, and that the two sets of consequences are inconsistent.

The logical situation here, then, is that (1) it can be shown on *certain* relativistic principles that Peter and Zebedee would not, in the accepted hypothetical case, be born simultaneously; and (2) that it can be shown on certain *other* relativistic principles that they would be born simultaneously. This, in itself, is obviously a contradiction. But let us develop the further consequences of these two implications taken together, using, for the case of the former, McGilvary's own arguments and computations. (1) Assuming that Peter and Zebedee are *not* born at the same time, what will be their ages, and the readings of their clocks, when they meet? McGilvary's answer is that by Zebedee's clock Peter meets Zebedee "at time $t = 70$, *i.e.*, at 70 seconds past 12 o'clock". But Peter's clock on Zebedee's arrival at P, "has the reading $t' = 21$".[14] Thus, since their ages "advance with the rhythm of their clocks", Zebedee at their meeting is of the age of 70 (seconds or years, according to the distances assumed) and Peter is 21. (2) Peter and Zebedee, as has been shown, *are* born at the same time; and, as McGilvary says,[15] Peter's ageing (whenever he was born) proceeds during his relative motion only 3/10 as fast as Zebedee's and Zebedee's only 3/10 as fast as Peter's. Thus—if the retardations are physical effects occurring on their respective platforms—each when they meet will be 3/10 as old as the other. From this consequence there can be no escape, when it is once understood that the two trav-

[14] McGilvary's proof of this is summarized at McG. I, pp. 370–371.

[15] McG. I, p. 371.

ellers could be born at the same time, and that the theory implies that they could (though it also implies that they could not). If we wish to assign specific values to these ages, it is necessary to have one age 'given' for the computation to start from. Let us, then, take the age of Peter as determined by McGilvary, *viz.*, 21, since we are assuming that this follows from one of the implications of the theory. Then Zebedee will, at their meeting, be 3/10 of this age, *i.e.*, a little over 6. But it is equally necessary that Peter be 3/10 as old as Zebedee, since otherwise he would be robbed of the benefit of *his* relative motion; *i.e.*, he will be not quite two. But in order to arrive at the conclusion that Peter is 21, McGilvary assumed Zebedee to be 70; therefore he must be 70. Thus, on combining the consequences of both of these implications of the theory, it follows that Peter will be 21 and 6, and Zebedee will be 70 and 2.[10] Each will be older and younger than the other. But even if we do not combine (1) and (2), the symmetrical paradox, as has been shown, follows from (2) alone. If, however, the comparative retardations are not taken as *real* retardations, all these fantastic consequences can be avoided.

This must suffice for the proof of Propositions V, 2*a* and V, 3*a*.

E. We proceed to Propositions V, 2*b* and 3*b*. There is, of course, in relativity theory no fundamental difference between unaccelerated motion of approach and of separation. Propositions I–III apply to both. Nevertheless it is, for the purpose of the present discussion, useful to distinguish them. For if, *e.g.*, the travellers Peter and Paul start their journeys from the same place, no question can be raised as to the possibility of their being born at the same time, or being of the same age when their relative motion begins; they may, as in the usual story, be supposed to be literal twins. McGilvary's argument for the non-simultaneity of the births has, therefore, here no relevance. Does

[10] The initially given age necessary for getting the computation started is here taken to be an age (of one of the travellers) which has already been retarded in comparison with the other's. This procedure is in accord with the assumption which I am combating, that the comparative lag (and its result, when both are born simultaneously) is a physical fact on each traveller's own platform. There must be a real retardation on S relative to *any* real age on S', and *vice versa*. The vicious circularity of this is a consequence of the assumption. Another and more orthodox procedure is to take each system in turn as at rest. When this is done, no retardation need be assumed for the resting system, and therefore, when the computation is reversed, the same initially-given time-interval (proper time) may be taken for S' as was first taken for S. In this case the results of the equal mutual lag (when both infants are born at the same time) must be equal; *i.e.*, each will be younger than the other, not only in the same ratio, but by the same amount. (*Cf.* the computation of Born cited below).

there, however, legitimately arise a corresponding question as to the possibility of common moments *after* they have ceased to be at the same place? Manifestly not. For if, after their motion had begun, there were no single moment with respect to which we could say, 'At this instant Paul, in consequence of the retardation, is (or to an observer in the other system appears to be) younger than Peter is at this same instant', we should be debarred from asserting that Paul's relative motion had been accompanied by any comparative retardation whatever. Throughout the period of increasing displacement no lag, whether mutual or unilateral, could be predicated. In this case, then, the implication in relativity theory of the postulate of common moments for the two distant bodies is especially evident. And the symmetrical paradox plainly follows. For (*a*) the travellers admittedly start at the same time with the same age; (*b*) the comparative lag during their relative motion is admittedly equal; (*c*) therefore, at any common moment after the start, the age of each will be less than the other's *i.e.*, Paul will be younger than Peter and Peter at the same instant younger than Paul.

A motion of separation, moreover, is the kind with which physicists usually begin when they tell us the tale of the twins. They do so, as I have previously remarked, because they habitually limit their consideration of the problem to a round-trip. In a return journey an acceleration (reversal of direction) occurs; and they are able to deduce from the general theory that there will, during the acceleration, be a compensatory speeding-up of the ageing of one of the twins (and of the rate of the clock beside him), and therefore that there will, at the end of *such* a trip, be no symmetrical disparity in age.[17] Nevertheless, since a round-trip starts with a motion of separation (outward journey), we can, by examining what the relativists tell us about this first phase of the total journey, show by their own testimony that, so long as they keep to unaccelerated motion, they explicitly admit Proposition V, *2b*, *i.e.*, the symmetrical paradox. This I have already shown in each of my previous papers;[18] but since McGilvary still declares that the conclusion is not justified by the equations, it is necessary to remind the reader of the fact that so competent a mathematical expositor as Born, in a passage incompletely cited by McGilvary, has deduced this consequence from them. Two observers, *A* and *B*, both carrying "ideal clocks which indicate their proper time" are supposed by Born to be originally at rest. The clocks start going at

[17] *Cf.* L. I, pp. 158–159; II, p. 552.

[18] L. I, pp. 158–159, 164–165.

the same time. Only one instance of relative motion is in question, but we consider each observer in turn as moving relatively to the other, beginning with B; and in B's case we assume that "the effect of acceleration [during reversal] may be neglected", *i.e.*, B's clock is to be regarded as in unaccelerated motion throughout. "Then the clock of the observer B must have lost time compared with the clock of A after B's return to O", from which he set out. When the computation is worked out, it results that "*the advance of A's clock with respect to B's clock is $\frac{\beta^2}{2} t_0$; and this holds good for every moment of the motion,* since the outward and the inward journey take place with the same velocity, and in particular it holds good for the moment of turning". We next consider A's clock as the one in motion. Then, "in the times when A is moving uniformly and the special principle of relativity must be applied", *e.g.*, at any time during the outward journey, "*A's clock must, conversely, be behind B's clock by the amount $\frac{\beta^2}{2} t_0$*".[19] What happens to A's clock, by the general theory, in consequence of its speeding-up during the reversal, does not concern us here, since we are interested only in the unaccelerated outward journey which precedes the reversal. What Born has told us about this, then, is that (a) there must be assumed common moments during this mutual displacement, with reference to any one of which the readings of the two clocks can be supposed comparable; and (b) that *at every such moment A's clock is in advance of B's clock and is also behind B's clock.* And the terms "in advance of" and "behind" refer to the instantaneous readings of A's clock in comparison with B's at a common moment, not simply to a mutual comparative lag during an interval. Born then applies the same conclusion to the case of the twins. He thus, for the case of the outward journey, expressly presents the symmetrical paradox as resulting from the equations of the special theory.

McGilvary's reply to this is that "by Born's logic" the A and B clocks "when they meet again at O" will not have mutually lost time relatively to one another, but "will have lost time equally compared

[19] *Einstein's Theory of Relativity*, pp. 214–215 and 282–283. It will be observed that for the motion up to "the moment of turning", *i.e.*, for the outward journey, the assumption that "the effect of acceleration is negligible" is unnecessary in the case of B's motion; for during this phase there is no acceleration that can affect the comparative behavior of the clocks. There is, indeed, an acceleration at the moment of starting; but this, Born points out, has "no influence on the relative rates of the clocks of A and B since they are at the same point" at that moment (*op. cit.*, p. 283).

with a clock left stationary at *O*". The confusions here are prodigious. (*a*) What *is* the point *O*, and with respect to what is it stationary? Obviously, not with respect to *A* or *B*. For both of them, by McGilvary's account, have moved away from and returned to it; and a clock there during the two phases of unaccelerated motion will have been retarded in comparison with each of them, and they in comparison with it, all three having been simultaneously set going at the same place with the same reading. It can only be said to have remained stationary with respect either (*i*) to some third relative system—which is irrelevant when we are considering the effects of the relative motion of *A* and *B*; or (*ii*) with respect to some absolute and universal system, *i.e.*, in a Newtonian space. (*b*) "Born's logic" and his equations are *not* concerned with the time-relations of the *A* and *B* clocks to a third "left stationary at *O*"; they are concerned with the time-relations of these two clocks to one another. *His O* is simply the origin of the *x*-axis of *A*'s system, which is at the start coincident with the origin of the corresponding axis of *B*'s system; and the clock which "remains at *O*" is *A's* clock.[20] (*c*) McGilvary's reply is, in any case, irrelevant, because it relates only to a round-trip; it "scrambles the eggs". As I had repeatedly noted, for such a trip the equations show that the two clocks at their reunion would not exhibit a mutual inversion of coincident readings. But (*i*) what they show is that the two clocks would then have unequal readings. They could therefore not "have lost time equally" compared with another clock which is then at the same place with both of them. (*ii*) The equations show this, however, only because, during the reversal, a speeding-up equal in amount to its total retardation is ascribed to *A*'s clock,[21] in accordance with the general theory (a fact which McGilvary ignores). (*iii*) But my argument did not relate to a round-trip. It related, as I have reiterated to the point of tedium, exclusively to the phase of unaccelerated motion prior to the reversal. And with regard to this, Born's equations show precisely what I have said they show,

[20] In relativity "the point *O*" has no meaning apart from a specified reference-system; "it is fundamentally impossible to find the same place a second time in space" (Born, *op. cit.*, p. 61).

[21] *Cf.* the passages already cited, L. I, pp. 157–159; also the analysis of Einstein referred to, *ibid.* Einstein also is referring only to the time-relations of *two* clocks; and he finds that during the outward journey of either it "goes more slowly" than the other. But, once more, since each started at the same time with the same initial zero-reading, this mutual lag implies a mutual inversion of the clock-readings at any subsequent moment of the outward, or unaccelerated, portion of the journey.

viz., that "at every moment" of that phase *A*'s clock will be "in advance of" and also "behind" *B*'s clock. Thus McGilvary's attempt to meet my argument for Propositions V, 2*b* and 3*b* fails completely; it is merely a combination of non-relativistic assumptions, of a highly imaginative account of Born's reasoning, and of irrelevancies to mine, which is identical with Born's actual reasoning.[22]

F. The foregoing shows that all the contradictory propositions under V necessarily follow from the theory, when a retardation is regarded as a "physical fact" on the platform to which it is referred by the observers on the other platform. The only remaining passage in McGilvary's reply which has any *prima facie* pertinency to the main issue is the paragraph about this distinction between "physical reality" and "appearances". But what he says on this is not directed to showing that this distinction is ambiguous or meaningless; it is directed only to showing that, in a passage on this point, I assume that Peter and Zebedee could have been born at the same time. I have above pointed out that I did not "assume" but proved this, and have for good measure proved it over again. The distinction is, in fact, obvious, whether we adopt a realistic or an idealistic metaphysics. If the former, the comparative retardation of Peter's age either actually occurs on his platform or it does not; the same is true of Zebedee's age. And since Peter and Zebedee (as shown under *D*) would be born simultaneously, the resultant mutual inversion of their ages, at the place where they eventually meet, will be either a physical fact or it will not. If it is, the contradiction pointed out follows; if it is not, the result of the

[22] McGilvary in his fifth paragraph finds it "difficult to understand why" I had said that he had "'failed to meet, or even mention, the consideration'" which I had "'presented as the decisive proof that . . . any . . . way of escape from the contradiction involved in the clock-paradox' is impossible." That proof is the one restated above. That he had "failed to mention it" will be evident to anyone who reads his first paper. He supposes, however, that he had "met it squarely", presumably by his argument about the affair of Peter and Zebedee. This, however, does not meet it, either squarely or circuitously; for that argument has to do with a motion of approach, it depends upon a supposed proof that Peter and Zebedee could not be born simultaneously, and it takes no account of the statement of Einstein and the computation of Born as to the mutual inversion of readings and ages during the first phase of a round-trip. It is therefore without relevance; for this final argument of mine concerns only the motion of separation of Peter and Paul, who admittedly are born simultaneously, and it rests upon the cited statement of Einstein and computation of Born as to the time-relations of the *A* and *B* clocks and as to the ages of Peter and Paul throughout this phase of unaccelerated motion. With the actual statements of these writers about an outward journey McGilvary's argument is completely at variance.

"mutual lag" can be only a "reciprocal disparity of appearances". If an idealistic view is assumed, the age experienced by Peter when he meets Zebedee and the (different) age ascribed to him by Zebedee are *both* mere appearances; so of the age experienced by Zebedee and that ascribed to him by Peter. If, however, the idealist supposes one to be judging about the age actually experienced by the other, he too would presumably regard it as a contradiction to say that Peter's experienced physiological age is at the same time both greater and less than Zebedee's, and *vice versa*.

I have, I fear, reached the limits of length generously allotted by the Editors to this discussion. I must therefore reluctantly refrain from examining most of the remainder of McGilvary's reasonings. As they are all irrelevant to the main issue, dealing chiefly with questions about accelerated motion, the philosophical outcome of the discussion is not affected; and therefore the confusions which appear to me to abound in them need not be pointed out.[23] I must, however, refer before concluding to the fact that McGilvary repeats the "charge" that I have "scrambled the eggs", *i.e.*, "mixed up the problem of a return-journey with that involved in unaccelerated motion". Obviously, the only way of justifying this assertion would be through analysis of the actual contents of my papers, with respect to this matter. He attempts no such analysis. He merely quotes a remark of mine that the eggs have been sometimes scrambled by some other persons, namely, by certain expositors of the theory of relativity; promises to show that this remark is inaccurate; and concludes that *I* must therefore have "scrambled the eggs". Comment on this, if it is intended as reasoning, would be superfluous; and the conspicuous fact of the matter, as I am obliged to repeat, is that both my previous papers insisted, above all things, that the pertinent question concerns exclusively the unaccelerated relative motion of two clocks or living organisms. But anyone who drags in the question of a completed return-journey, and who assumes—as relativistic writers usually do—that, by showing that at the end of such a journey the symmetrical paradox does not arise, he has thereby shown that it does not arise as a consequence of the principles of the special theory during an unaccelerated

[23] I recognize one error in my preceding paper, for which I am glad to make my apology to McGilvary. It occurs in L. II, n. 22. It is true, as he says, that in his previous paper "the distances *M–A* and *A–P*" were not, as I had supposed, "by hypothesis equal". The point was, however, in no way essential to the main argument given in the text.

motion (*e.g.*, during the first phase of a return-journey), is *eo ipso* guilty of "scrambling the eggs".

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A REINTERPRETATION OF RELATIVITY

THE theory of relativity is an undeniable achievement in physics and is a logical development of the theory of measurement; but it does not have the significance for the universe which is usually ascribed to it. Real time is *not* fused with space and *absolute simultaneity does have a definite and definable meaning.*

Physics as a science is concerned with measuring and dating and so getting numerical laws. All this gives knowledge about the external world. But it would be a mistake to project this mensurational knowledge into nature without interpretation. The rejection of absolute simultaneity as meaningless encouraged most relativists to do this.

My analyses have led me to make a distinction between *chronological time* and *real time.* Chronological time is an affair of dating and measuring in terms of some standard motion. Real time is the fact of change or eventness. I hold that absolute simultaneity has meaning for real time, while operational simultaneity, which is the kind that relativity stresses, is bound up with light-signaling. When two bodies are moving with respect to one another, their operational simultaneities are not identical. It follows that length (space) and t (chronological time) as numerical quantities always require a reference to the frame from which the measurements are made. It is for this reason that physicists speak of space-time. They mean that length and t as quantities are not separable.

I have no criticism to pass upon this so long as measurement is not confused with what is being measured. Measurement gives knowledge about nature. The philosopher—and I hope the physicist also—needs likewise to think clearly about the structure of nature. It is here that the question of the real nature of time appears. Is the Astronomer Royal's time—to use Eddington's expression—as basic as supposed? I take it that physicists like Jeans, Eddington, and Millikan are aware of this problem.

It is my thesis that real time is simply the fact of change or eventness in the universe and is always local. There is no change which runs instantaneously across the universe. The unity of the universe is spatial rather than temporal and is of the nature of substantial co-

existence and continuity. Nevertheless, it is correct to speak of a cosmic time if we simply mean the *class of events* coactual with any given event. In real time, simultaneity is the fact of co-occurrence and is not a kind of cosmic temporal relation. It is in this sense only that the universe moves abreast. Past events are those which have perished and are no longer actual. Future events are those which are not yet actual. *Simultaneous events are just the class of actual events.* This is what the philosopher and the physicist must mean by absolute simultaneity.

But the physicist has a job of an empirical sort which the philosopher does not have; that of dating and measuring. The job of the philosopher is essentially that of analysis of categories. For him, real time involves the order of succession and the class of actual events in the universe. He is as much opposed as the modern physicist is to Newtonian conceptions of time.

It follows that the fusion of space and time must not be taken as valid for anything but chronological knowledge about nature. In nature itself only the actual exists. I am also led to believe in determinate size apart from measurement. Quantities are cases of knowledge about and are relative to a frame; but not so the intrinsic properties of things. I am also led to believe in gravitational forces and to distinguish them from the kinematic description in terms of space-time. It follows also that relational movements have meaning as well as relative motion. Relational movements are changes of neighborhood while relative motion is an affair of epistemic reference, which presupposes actual movement.

Finally, so far as I can see, cosmic time has no arrow of an entropic sort. It is merely the fact of dispersed change in a substantial, extended world. I expect to find that Millikan, Lewis, and Bridgman will turn out to be right in their criticism of the naive application of entropy to the universe.

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REVIEWS OF BOOKS

The Right and the Good. By W. D. Ross. Oxford, The University Press, 1930. Pp. vi–176.

Some Problems in Ethics. By H. W. B. Joseph. Oxford, The University Press, 1931. Pp. vi–136.

The comparison at once suggested by Mr. Ross's book is Mr. G. E. Moore's ethical writing. Like Moore, Ross practices the analytic method in quest of value-simples. Like Moore, he holds to the indefinability of fundamental value-terms, though, unlike Moore (unless, as Ross plausibly argues, pp. 9–11, the *Ethics* constitutes a recession from the strict utilitarian interpretation of rightness in the *Principia Ethica*), he is unable to assimilate the notion 'right' to the notion 'good'. Like Moore, Ross admits as unquestionable in the abstract the principle of 'organic unities', though, unlike Moore, he considers the importance of the principle doubtful. Like Moore, he depends upon common sense and self-evidence, where no other appeal is available. Like Moore, he aims at axiological precision through stylistic clarity, though Ross is mellow in dealing with opposing theories and acutely conscious at times of what he does not know.

Positively, and briefly, Ross finds in 'right' an equally fundamental notion with 'good' and of course equally indefinable, though not as value equally intrinsic. He utilizes Moore's distinction between 'good' and 'goods': good he conceives as a quality and defends it as such (particularly against Perry's relational view and the Meinong-Urban interpretation of it as an 'objective'); and things intrinsically good (restricted as they are to "states of mind or relations between states of mind") he reduces to four incommensurables: "virtue, pleasure, the allocation of pleasure to the virtuous, and knowledge" (p. 140). Rightness is also a quality—a quality belonging to acts and to them independently of their motives (motives being relevant to goodness but not to rightness). There are certain acts which we assume (*prima facie* is Ross's ordinary description of them) to be right—such as the keeping of promises—and certain things we assume to be good.

How such assumptions can be justified would seem the imperative question for ethical theory. Ross himself is conscious of methodology but not acutely so. His general reliance is upon Cook Wilson's principle,

"what we really think". Whether Ross misrepresents Cook Wilson the reviewer unfortunately does not know for certain; but Ross appears to take seriously the notion that our nearest approach to what is so in the value field is what we really think is so. I refer not merely to his explicit statement that "the moral convictions of thoughtful and well-educated people are the data of ethics just as sense-perceptions are the data of a natural science" (p. 41), but also to his procedure in trying in separate chapters to find out what we really mean by both right and good as the prelude in each case to what rightness *is* and goodness *is*. This general reliance seems to break up into two techniques as it is assimilated to the two basic concepts under discussion: *prima facie* obligations in the one field, self-evident intrinsicalities in the other. The eventuation is the same, for since "we have no more direct way of access to the facts about rightness and goodness and about what things are right or good, than by thinking about them" (p. 40), the *prima facie* turns out to be the *ultima facie* and the self-evident the indisputably real. Now this is an ethical method as old at least as Aristotle and as respectable as erudition and gentility can make it; and inside any culturally homogeneous group it carries complete conviction. But it carries little weight in the very area where decisiveness is most crucially needed—in conflict-zones. Where there is any real dispute about obligation or value, men differ as to what they really think; and the appeal to self-evident principles in a conflict-situation (and there is no vitality to the principle in any other situation) is negated by the necessity that begets it. The rub of Cook Wilson's principle is in the *we*. If the principle read what *I* or what *all men* really think, either its egoistic relativism or its altruistic perfectionism would be apparent. But as stated by Ross in terms of we, it carries the implication not only of a relatively homogeneous group ("thoughtful and well-educated" are the honorific words used by Ross—words that coming from any educational environment such as Oxford exclude as well as include), but of an "other-group" whose what-we-really-think has no diagnostic significance for truth and reality. And therefore it is not a method of scientific discovery but of personal conviction and social edification. A ubiquitous predicament cannot with logical impunity be turned into a moral method. In a conflict-zone, the principle as stated is a tort courteous that calls for a retort discourteous: here ends the argument and begins the fight.

Aristotle used the method frankly; for what others than Greeks thought about morality did not count—any more than what American professors think counts with (say) Mr. C. D. Broad (see his *Five*

Types of Ethical Theory, p. 55). Mr. Ross uses the method gently, much more gently than (say) G. E. Moore or C. D. Broad. So graciously indeed does Ross use the method that one suspects that he distrusts it. Or is it, as suggested above, that he is not "acutely" conscious of the problem of method? At any rate, if one had not been prepared by Ross's gentle handling of opponents who do not accept his *prima facie* or his self-evident, it would come as an unforgettable shock to discover, albeit in a footnote, that there is after all a real distinction between "what we really think" and what is so. At least this distinction prevails in relation to beauty, and what is true with reference to beauty may surely be *thought* to prevail with reference to rightness and goodness. Admitting that one may mean by 'beautiful' a quality in the object, Ross argues for a more subjective interpretation of beauty: "What I am suggesting is that we are deceived in thinking that beautiful things have any such common attribute over and above the power of producing æsthetic enjoyment" (p. 128 n).

Of course, there may be a difference in any field between what we think and what is so. This Mr. Ross admits (p. 41). But is there a difference between what we *really* think and what is so? In natural science, yes ("It would be a mistake to found a natural science on 'what we really think'", p. 40); but in morality, no. What we really think is all we have in morality; and apparently all that we have is always adequate. Adequate for what? For intolerance? For superiority? For indifference? For skepticism? For conviction? The last seems to be Mr. Ross's answer. But it leaves us where we were: without a test for, not to say a constitution of, moral values. Intelligent persons actually think differently about moral values, as witness Mr. Ross's quarrel with Mr. Perry. If the data of morality are *actually* what Mr. Ross says they are (and I raise here no question against his statement), morality must depend for development upon empire, education, persuasion, rather than upon assertions of what any we-group really thinks. So deeply intrenched is the appeal of this method, however, that it may take a Russia to reveal to us the operation in value analysis and criticism of value feelings and judgments and the consequent implication of social superiority, not to say of cultural intolerance, in the what-we-really-think principle. We do not indubitably find such simples as the principle requires; for our self-evidences are not mutually evident and the *prima facie* is not accepted at face value across cultural boundaries. Communistic intolerance of opposing ideologies may yet teach us to see our own intolerance as it is. For the more importance we attach to what we really think, the more sig-

nificance we are obliged by our very method to attach to what others really think—to what they really think even about what we really think. The moral of this line of criticism would seem to be that there can be no legitimately assured moral convictions short of a universally homogeneous culture in which all men would appear even to an Oxford man to be "thoughtful and well-educated". And if it takes such an eventuation to justify the faith, the faith itself is not as objective as is thought; for such a test would as well as not prove the complete relativity of all value to social agreement. In short, so far as the reviewer can see, Mr. Ross's method dooms one to hold that all value is constituted by social agreement ("what we really think") or that, however value be constituted, we can never know it, since what alone we can know in ethics is what we really think about it.

Clear as Mr. Ross is about most things, I cannot feel that he is clear about this fundamental matter of method. His method is evidently intended to give a body of data for morality, but to satisfy him it must be an objective body. When he makes it objective, however, he puts it beyond his method; and when he makes it accessible to his method, it is not objective, or at least cannot be unambiguously displayed as such. Surprising as it may seem, indeed, Ross finds no goods, nor any goodness either, objective in the sense of being "extramental." He not only admits this (p. 89), but sees clearly that G. E. Moore, in finding more value in a beautiful universe than in an ugly one, mind apart, is guilty of "a surreptitious introduction of a subjective factor, namely of oneself imagined as contemplating a universe or the things in it" (pp. 130 f.). This is surprising because Ross seems to attach great importance to the notion of "intrinsic" and thinks himself to accept, minor objections apart, Moore's definition of it. Moreover, he has (I think successfully) argued away Perry's claim to intrinsic goodness, in Moore's sense of the term 'intrinsic' (pp. 75 f.). But Moore's conception, or any conception to which Perry is not entitled and Ross is, turns precisely upon the possibility of anything's being good while existing quite alone. That which would not be good apart from mind is not intrinsically good. "Contemplate," says Ross, "any imaginary universe from which you suppose mind entirely absent, and you will fail to find anything in it that you can call good in itself" (p. 140). Since, according to Ross, there are no intrinsic goods save in states of mind or relations between states of mind (Ross makes no capital of these relations between states of mind, for relations between states of mind in his sense seem themselves to be states of mind), it would appear that he has no intrinsic goods

of Moore's sort, save upon the contrary-to-fact presumption of states of mind existing, and as so existing being good, apart from mind itself.

The only light that the reviewer can throw upon this predicament is the suggestion that Ross has an equivocal conception of the nature of the intrinsic. This suggestion, if tenable, may be construed as a compliment to Mr. Ross: his supreme general clarity reveals his occasional lack of clarity to minds less clear than his own. That this suspicion of equivocality does not spring out of the blue may be seen by noting and trying to harmonize with Moore's heroic definition of intrinsic good the one several times suggested by Ross himself: "good apart from its consequences" (*e.g.*, pp. 68, 74, 134). Now, it is clear that a thing does not have to exist quite alone in order to exist apart from its consequences or be good as existing quite alone in order to be good apart from its consequences. It is easier in imagination to arrest the flow of time, and hold good in its one-dimensional complexity the resulting cross-section, than to hold something good as existing quite alone which never could exist quite alone and would not be good if it did. To insist upon a contrary-to-fact criterion suggests oversimplification. Surely Ross's "states of mind or relations between states of mind" cannot any more nearly be conceived as having value existing quite alone without a surreptitious introduction of mind itself than can Moore's objective beauty without what Ross sees to be a surreptitious introduction of a spectator.

If this line of criticism could be sustained, Mr. Ross would be estopped from using Mr. Moore's definition of intrinsic goodness. If he then elected to use his own, he would find himself in very different company—in company that would not be entirely uncongenial to his larger bent. I refer to the long line of English moral theorists from the eighteenth century which has, as Mr. Laird clearly summarizes it in *The Idea of Value*, taken some form of "approval" to be the essence of value. I refer, among contemporaries, to Mr. R. B. Perry, with his emphasis upon interest. Ross seems to me indeed to have gone further in Perry's general direction than he recognizes. "I am inclined to think", he says, "that the only thread that connects our *application* of the word in all these senses—*i.e.*, the only common fact that is present whenever we use the term 'good'—is that in each case the *judger* has some feeling of approval or interest towards what he calls good. . . . The attempt to find a common thread in our *application* of the term is not what I am chiefly interested in" (pp. 90 f.). What prevents this rapprochement with Perry from seeming of major importance to Ross, as he makes clear in the context of the foregoing

quotation, is his quest for a good that is intrinsic, in that difficult sense which we have just discussed. "I feel pretty clear", Ross concludes his discussion of this aspect of Perry, "that though our applications of it are always accompanied by an interest in what we thus call good, the existence of that interest is not what we assert when we so describe things" (p. 91). If there be no intrinsic goodness (Ross explicitly denies intrinsic value to both beauty and rightness, p. 133) in Moore's sense, "application" of the term goodness might *become* its meaning—in which event Mr. Ross would find himself in substantial agreement with Mr. Perry. I hardly expect thanks for this attempt to ease Mr. Ross into Mr. Perry's camp, any more than does Mr. Ross for easing Mr. Perry into the camp of the hedonists (p. 99); for what one himself *really* thinks is much more important to any philosopher, Mr. Ross not excepted, I presume, than what another philosopher *really* thinks, even though the first philosopher modestly pluralize his pride into the form "what *we* really think."

I have been precipitated upon this path of criticism through tempting invitations offered by apparent hesitancies on the part of Mr. Ross himself. I can only add my opinion that Ross's very penetrating discussion of beauty, already remarked, points to a more satisfactory theory of the nature and status of goodness than the one here defended by Ross. This discussion of beauty is as significant for what it denies as for what it affirms; for in the discussion Mr. Ross deserts Mr. Moore to develop what from the present point of view is a subjective theory; he detects and exposes the fallacy of Moore's criterion of intrinsic value; and he seems completely to desert his own method of determining axiological facts by any appeal to "what we really think", if the "we" be allowed to reach beyond Oxford. Moreover, the deep feeling that Mr. Ross expresses (p. 131) as to the differential objectivity of good (in raising frankly the question as to why goodness cannot be treated in the same manner as beauty) has a cure already prescribed. Mr. Ross *really* thinks that goodness precedes and conditions approval. "If we think" says he, following for the moment the logic of his method, "that feeling is . . . the primary thing, I suppose the most natural name for it would be 'approval'" (p. 131). His discovery regarding the mistaken feelings other people have concerning beauty furnishes the antidote to his own (probably mistaken) feeling regarding goodness. The human prejudice in favor of harder exactions in the moral field than can survive culture and sophistication in the æsthetic field is not improbably a mistake. Be that as it may, the utmost that Mr. Ross proves regarding the differential claim of goodness to

objectivity is (1) that he really thinks it objective and (2) that there are difficulties to others thinking otherwise than as he thinks about the matter. The case, however, remains for all that not made out for one who, like the reviewer, does not feel the difficulties so clearly indicated by Ross (pp. 131 f.). Moreover, so cogent and final does Mr. Ross's use of the now familiar method appear that the method itself will almost surely suffer loss of prestige through his superior use of it.

It is doubtful, however, whether there should be grief over that eventuation of the matter. Intellectual clarity may be of genuine disservice to life where things are actually reported as clearer than they are. Next to the vice of confusing the simple is the vice of simplifying the complex. If there be anything simple about value, the opinion grows upon me that it is not the main thing about value. The term 'good' names no simple quality save by stripping what is named of the experiential thickness that made it worth naming in the first place. As regards this charge of over-simplification, Mr. Ross can be both accused and excused: excused if one turn to his ingenious exposition of what he calls a "surplus motivation" (p. 172) and his ensuing correction of the Kantian rigorism through the doctrine that an act done from duty *plus* an inferior motive is better than an act done solely from duty, if the duty motive in the first instance were adequate to effect the act without the addition; accused if one turn to his belief that knowledge-value increases with the growth of knowledge-generality (pp. 147 f.); to his perverse inclination, borrowed presumably from Meinong but much more poorly integrated with Ross's than with Meinong's system, to find value only in "facts," "that-constructions" (pp. 111 f.); or if one turn to his complete separation of acts and motives in his effort to distinguish more clearly than does life rightness and moral goodness. The morally good act, Ross thinks, is an act whose motive is good, whereas a right act is an act that ought to be done. Now one is never obligated to have a good motive, because motives are outside our control *ad hoc*; and so obligation characterizes right but not morally good acts.

It is just here, I think, that Mr. H. W. B. Joseph's little book, *Some Problems in Ethics*, offers improvement. It should be all the more welcome to Mr. Ross because it arises from the same cultural environment, if not indeed, as appears, from continuing discussions at Oxford in which he himself personally participated. A word concerning Mr. Joseph's general problem will improve somewhat, I hope, the scant justice done his engaging treatise by noting it here as subsidiary to

Mr. Ross's more pretentious book. Joseph is preoccupied more with the problem of obligation as man faces his world than with it as man faces other value concepts. How obligation can arise, have meaning, and can function in such a world as science describes is his major problem. I do not mean to suggest that he is concerned with practice, whereas Mr. Ross is satisfied purely with theory. Both books deal with theory and both envisage action. But Mr. Ross is more inclined to clarify concepts with reference to one another in the general confidence (*cf.* what has been said about his tending to identify "what we really think" with what is actually so) that thereby improved practice will spontaneously emerge; whereas Mr. Joseph does not see how concepts themselves can arise from a world of physical forces or how moral notions, however clarified, can function if psychological behaviorism be true. Mr. Joseph has (inherited?) T. H. Green's problem, though his treatment of it is different enough. There accompanies his treatment, as though it were the shade of Green, a sense of criticized wholeness involving both theory and practice that makes Joseph a welcome supplement if not corrective to the analytic emphasis of Ross.

This improvement becomes apparent, as already intimated, in Joseph's treatment of the specific relation between motive and act, as well as in the larger relation between rightness and goodness. His view of the first is that it is a false abstraction to try for ethical purposes to conceive an act (as might be legitimate in natural science) independently of its motive, since every ethical act has a motive (p. 43). An 'act' with a different motive is, then, by definition, a different act. Nor is this an arbitrary use of definition; it is a use that keeps theory oriented toward practice. The fact that others (notably Ross) have made the distinction testifies to their overdoing the analytic method, as I have suggested, and also to an ambiguity in the word 'right', as Mr. Joseph suggests and, in a long digression, argues. But it is with reference to the larger question, the relation between rightness and goodness, that he exerts himself to the full. He admits, with Kant and Ross, that we ought to do some acts because they are right (p. 37); with Moore and Ross that some acts are right because conducive to goodness. But he denies that any acts are right for no reasons or merely because they are right. Such acts as are crucial for this discussion are right because they are good, but the goodness that makes them right is not in their motive, nor in their consequences, nor in themselves, but in "the system which the act forms with its context; and it would be the thought of the goodness in this system, rather

than in the particular action alone" (p. 97), that constitutes the obligation to perform it. Mr. Joseph is led, in elaborating and defending this view against Utilitarians, Kantians, and Ross, to hold not only (with Moore as against Ross) that good is the fundamental value ("rightness is a sort of goodness", p. 92) but (against Moore in turn) that good is not a quality at all but (in the spirit of the Schoolmen) a substance (p. 79). Without following this ingenious contention through his many digressions as well as through some very cogent reasoning, we note that his setting is, as observed, not only more concrete than Ross's but also, as now to be indicated, more socially realistic.

For as he turns definitely toward practice, he sees, as Ross could not see because of his "what-we-really-think" principle, that though the social harmony which this theory of goodness calls for is "easily illustrated, so long as we take a family or some other *small* society as the community in whose lives together this life is to be realized" (p. 134), it is a different matter both for theory (p. 26) and for practice (p. 134) when the "we" that makes moral speculation at Oxford urbane if not easy is extended to denote, as it always seems (surreptitiously) to connote larger, not to say the largest, communities. Though, as Joseph observes, the self-sacrifice of one man has often been approved, "that one people should perish for another, or for the world, no people has ever yet believed, if it was they that must perish" (p. 134). The consideration of this difficulty in practice (a difficulty quite as obvious in theory if one dared realistically to render unambiguous the "we" of Mr. Ross's principle) leads Joseph at the end of his book to say, in the spirit of T. H. Green but a spirit now chastened from indicative to optative mood, that there "ought to be a good absolute, the form of which would determine what the lives of all in the common world should be; and all of us, so far as we had understanding and good will, ought to acquiesce in the goodness of this form of life that includes the lives of all, and to desire its realization, however much, in the vulgar judgment, this were to our own hindrance" (p. 135).

But to return from such hope, however noble and edifying, to the analysis of Mr. Ross's position, we may say, in conclusion, that Mr. Ross himself furnishes as good materials as does Mr. Joseph for correcting his own over-simplification—furnishes the materials in his repeated, if surprising, skepticism of axiological monism. "I cannot agree", he says, "that the presumption is that there is any one characteristic by virtue of which all the things that are good are good" (p. 79). "The assumption", he elsewhere says, "that there must be

'a general theory of value' applicable to value in all the senses of that word seems to me to be unjustified" (p. 90). And finally he declares, "What common thread there is, is one that connects not the various meanings of good, but our use of it in these various meanings" (p. 91). If we follow in one direction the implications of such pluralistic emphases as these, we end, I think, with the conclusion that there is a unique, indefinable quality not only to every word (down to the humblest preposition) but to every separate occurrence of the same word. And this is to reduce the doctrine of simplicity to such pluralistic complexity as completely to rob it of any significance save a purely abstractionist one. In that field of enforced silence (for how can one talk if nothing ever means anything else, not even itself on separate occasions?) one might dream endlessly—with no responsibility attached. If we follow in another direction the implications of such emphases, we end not necessarily, I believe, with the idealistic doctrine (sadly suggested by Mr. Joseph, though gladly and confidently affirmed by bolder spirits in other days at Oxford) that everything borrows its quality from something else (*i.e.*, from the 'whole') but we might, upon election, end with the intermediate position, suggested by Ross in the third of the foregoing quotations, that meaning (even axiological meaning) is relative to finite purpose. And this would be to make all value, as Ross so conclusively makes beauty, relative to some knowing-feeling center—a modest beginning to be expanded by effort to the whole human community rather than to be attributed by thinking to the absolute.

But in following thus through to my own biassed conclusion what seems to me the central position and problem of Mr. Ross's embarrassingly suggestive treatise, I have consciously, if unhappily, had to omit almost innumerable other brilliant observations that the book contains. I shall not try to repair in a final paragraph the loss and injustice entailed by my own election. But I may add my conviction of the superior fertility of this book for both value criticism and value appreciation. Among its many fine characteristics, not the least fine is its modesty.

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The Monadology of Leibniz. With an Introduction, Commentary, and Supplementary Essays by HERBERT WILDON CARR. Los Angeles, University of Southern California, School of Philosophy, 1930. Pp. xii, 214.

Judging by the diversity of interpretations offered by commentators

on the philosophy of Leibniz, the layman's superficial conception of philosophy as consisting in a number of independent, arbitrary, and purely subjective opinions, on subjects concerning which decision must ever remain dubious, seems eminently justified. In this respect Professor Carr's commentary on the *Monadology*, like the earlier studies of Latta, Russell, Cassirer, and Boutroux, carries on what really merits the designation of a tradition. No doubt the ideal of permitting a philosopher to speak for himself must ever remain such; all commentaries reveal to a certain extent the same inevitable defect with respect to this ideal. To each age its own Plato, its own Kant! And there is no real harm in this; in a sense it is all to the good. But the divergence between the ideal and the actual, between the real Leibniz and the Leibniz revealed to us by his interpreters is, I am tempted to maintain, quite unparalleled, extraordinary. What irony! That Leibniz, aptly described by Windelband as essentially *eine konziliatorische Natur*, of all important thinkers, should suffer this peculiar fate!

To a certain extent the explanation for this state of affairs is obvious. Leibniz is a transitional thinker; that is, he is a rationalist disturbed and attracted by the opposing and powerful empiricism of the time. The desire to reconcile is, indeed, a main source both of his virtues and of his defects. And with a single noteworthy exception his philosophical writings are fragments or bare outlines, the expression of ideas not thought out to the end. Had he deliberately planned to bring about such a confusion of philosophical tongues, he could hardly have proceeded otherwise than he actually did. Nevertheless it does seem that knowing all of these things it should now be humanly possible to produce a more objective exposition and criticism of his work. Certainly the value of such an undertaking is manifest. And because of his advocacy of a philosophy so closely akin to that of Leibniz, Professor Carr would seem to be the very man to perform this task. He has succeeded, however, only in so far as sympathetic exposition is concerned. On the other hand, this similarity of doctrine has effectively prohibited adequate recognition of the tremendous difficulties facing a spiritual pluralism of the Leibnizian type. This is brought out most clearly, perhaps, in the interesting chapters following the commentary itself.

Professor Carr seems to conceive of philosophy as faced with a series of alternatives between which the philosopher is forced to choose. One alternative being rejected, the other *ipso facto* prevails. Philosophy must begin either with irrational and unjustifiable assumptions or with a fact directly revealed (pp. 201, 172); finite spirits must be

either adjectives of one all-inclusive substance or themselves independent substances (p. 94); to solve the problem of the relation of the reals to each other we must invoke either a pre-established harmony inexplicably ordained from above or an *élan vital* functioning from below (pp. 176 ff.); space and time must be either objectively real in the Newtonian sense or subjectively ideal as Leibniz held; the common universe must be either the condition or the consequence of spiritual intercourse—and so on *ad infinitum*. That the second alternative in each case is no more tenable than the other is what Professor Carr fails to realize, and this failure is largely responsible for his inability to formulate a true estimate of Leibniz's very considerable contributions to modern philosophy. The sole apparent resource of pluralism in its efforts to avoid solipsism (the weak argument from analogy), the uncritical identification of 'force' with conscious activity, and the appeal to contemporary science as directly confirming philosophical conceptions—all these obvious defects of the Leibnizian philosophy appear to the commentator as perfectly valid modes of treatment of the problems facing a pluralistic metaphysics. The appeal to the biological theory of preformation in support of the idea that everything is full of souls has lost its force, now that the theory has been abandoned. But Professor Carr is quite undeterred by this circumstance and the moral to which it points—to beware of direct scientific confirmation of a philosophical doctrine. To confirm the doctrine that each monad perceives the universe from its own peculiar point of view he appeals to the physical theory of relativity, incidentally failing to perceive that his interpretation of the theory is quite at variance with its true physical meaning, and he likewise adopts "the [self-contradictory] principle of creative evolution . . . that intellect is a product or outcome of organic evolution" (p. 179), as a substitute for Leibniz's admittedly unsatisfactory doctrine of the pre-established harmony.

How much more comprehensible and instructive might Leibniz's doctrines become, were they once viewed in their proper historical perspective, as transitional between the earlier rationalism and contemporary empiricism on the one hand, and the later developments in philosophy due to the labors of Kant and his successors on the other hand! Take, as a single illustration of this point, the rôle played by the conception of substance in early modern thought, as contrasted with the part assigned to it in the Kantian system. That the endeavor to construe reality in terms of substance is bound to fail is one plain lesson to be learned from the breakdown of the two opposing schools, empiricism and rationalism, which between them completely exhausted

its significance as a metaphysical ultimate. And surely it was one of Kant's chief contributions to philosophy to demonstrate this fact and to introduce a more satisfactory means of rendering experience intelligible in its stead. It is only fair to add, however, that Professor Carr is not the only contemporary metaphysician upon whom this lesson is as good as lost.

The translation of the *Monadology* itself is, as we might expect, accurate and smooth, and the commentary accompanying each section is clear and instructive.

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Platon. II. Bd. Die platonischen Schriften. Von PAUL FRIEDLÄNDER. Berlin and Leipzig, Walter de Gruyter & Co., 1930. Pp. viii, 690.

The first volume of this work was reviewed in the PHILOSOPHICAL REVIEW, Vol. XXXIX, pp. 83 ff. The present volume contains a *seriatim* study of the dialogues. The author avoids the linear principle of chronological order and arranges them into three periods, each with sub-groupings based mainly upon analysis of form and content, but always with reference to the results of *Sprachstatistik*. Among the dialogues studied are included the *Hipparchus, Theages, Hippias I,* and *Alcibiades I,* although their 'genuineness' is not, in every case, accepted without reserve, and use is made, without hesitation, of the three well-known *Epistles*. Like Shorey, the author regards Plato's thought, from first to last, as constituting a unity, and treats the earlier dialogues as 'preliminary forms' out of which the later and greater dialogues grow by a kind of organic necessity. The *Republic* is central, and contains, worked into it, not merely the "Thrasymachus" (Bk. I), but also *Alcibiades I,* and, indeed, the content of most of the earlier dialogues, while the later dialogues all grow, in the same way, out of tensions appearing in the *Republic*. External principles of interpretation are rigidly eschewed. There is no word of the *Meno* as a 'programme' of studies in the newly formed Academy, or of the *Parmenides* as a *Seminarübung,* and no suggestion of polemical references to an Antisthenes or a Democritus, or of the *Theaetetus* as hastily finished because interrupted by a trip to Sicily. The interpretation, while frequently assisted by reference to other dialogues, is always based upon internal principles and considers each part mainly in reference to the whole of which it is a part. In the same spirit, the author carefully avoids suggesting that Plato is himself speaking through any *one* of his characters, whether Socrates, the Eleatic

Stranger, or the Athenian Stranger. He regards the tension between the *dramatis personae* as, in every case, a tension within the mind of Plato himself, a tension between 'the Socrates in him' and 'the Parmenides (Kallikles, Solon, etc.) in him'. So, too, historical statements he treats as inserted for verisimilitude, and the grouping of the *personae* he regards as always of essentially artistic significance. This extends to the *kopha prosopa*. When Socrates sits by, without taking part in the actual discussion, we must always remember that what is said is said in his presence, and with at least tacit reference to his dominating personality. The last part of the *Parmenides*, the greater part of the *Timaeus*, and the *Sophistes* and *Politicus*, are all to be understood in this way. It is not only in the earlier dialogues that Socrates is the key to the character under discussion, whether pious, self-controlled, courageous, or just. The later dialogues also, even when the discussion seems most abstract, are to be understood as tacitly pointing to Socrates as the truly wise thinker, whose views of the ideas and the good suggest that 'royal science' in which rests the hope of salvation for mankind. The 'dichotomies' of the later dialogues represent merely an ironical and exaggerated use of methods which have their counterparts, not only in the *Euthydemus*, but in almost every dialogue of the very earliest group, and, as distinct from the line of thought there associated directly with Socrates, there is nowhere any evidence of a distinct 'philosophy of Plato'.

The book has all the merits of the first volume: refined technique, erudition (and yet, scrupulous politeness toward colleagues holding different views), sympathetic insight, and a high degree of originality. These are, perhaps, more conspicuous in the first and second third of the volume, and it may be that the earlier portion is more intriguingly written. But there is nowhere any failure in accuracy or in insight, and the book undoubtedly places the author in the front rank of Plato-scholars. It is not merely a work of erudition, but a certain measure of Plato's spirit has descended upon its author, though not, of course, exclusively. It is one among other books; none of them is (alas!) the truly great book we should all like to see linking modern scholarship with the name of Plato.

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Types of Philosophy. By WILLIAM ERNEST HOCKING. New York, Charles Scribner's Sons, 1930. Pp. xi, 450.

This book is a new and rather unusual introduction to philosophy. It is divided into four parts. Part I discusses spiritualism and natural-

ism as types of metaphysics. Part II, under the heading "Theories of Knowledge", deals with skepticism, pragmatism, and intuitionism. Dualism, idealism, realism, and mysticism are discussed in Part III as types of philosophy which are both metaphysical and epistemological; while Part IV contains a brief summary of the author's own conclusions.

Although some mention is made of the different philosophers who have approximated to one or the other of the main types of thought, the method of the book is neither historical nor merely descriptive, but primarily logical. Each type of philosophy is analyzed into its fundamental conceptions, stated very clearly and untechnically, and is then criticized from the standpoint of its adequacy in giving a complete and coherent world-view. Some attempt is then made to show that each succeeding type treated is the logical result of the inadequacy of the preceding type in dealing with the whole of experience. The method is Hegelian without Hegel's obscurity of expression, and the book is an excellent introduction to this type of philosophical method as well as to the different types of metaphysics.

In the fourth part of the book, Professor Hocking summarizes his own views briefly and simply. There is truth in all the types of philosophy and the adequate view must be in the nature of a synthesis. Such a synthesis is to be found only in the direction of an objective idealism which does full justice to the intuitions of the mystic as well as to the facts of the naturalist, to the need for unity as well as to the recognition of multiplicity.

On the whole the book is an excellent example of clear analysis and close argument, coupled with a simple and direct style which is well adapted to the beginner in philosophy and gratifying to the more advanced student.

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Logic for Use. An Introduction to the Voluntarist Theory of Knowledge. By F. C. S. SCHILLER. New York, Harcourt, Brace and Company, 1930. Pp. viii, 470.

In the Preface to his latest work Professor Schiller outlines the plan and purpose of the book. The term, "Voluntarism", as descriptive of his present point of view, "has been substituted for 'Humanism' in order to sharpen the antithesis to the old Logics, and to bring out wherein they have all failed for the past 2300 years. They have all been based on *intellectualist* assumptions, . . . which when examined

turn out to be nothing but uncritically accepted conventions of language. . . . Their chief weakness was that they utterly ignored the actual character of human knowing and its relation to the problems of human life." We are given to understand that this work is to be primarily a constructive enterprise, as free as possible from controversy, and devoted to an exposition of what precisely does constitute "the actual character of human knowing and its relation to the problems of human life". "I felt . . . that I had in my day done enough academic controverting to allow myself, at last, the luxury of straightforward exposition."

Few there are who will deny to Professor Schiller the right to enjoy to the full the privilege he claims for himself. But the habits of a lifetime will have their way with a man, and with a Don Quixote as much as with any other. By the adroit use of question-begging epithets and witty phrases the author seeks to overwhelm his old adversaries, the 'intellectualists', the 'academic philosophers', and the 'Formal Logicians', and to defend and further the interests of all who are engaged in the 'actual' process of living, in 'actual' thinking, in the solution of 'actual' problems, or in the realization of actual human purposes.

As a matter of fact, the reviewer is heartily in sympathy with many of Professor Schiller's criticisms, such as those of the dogma of absolutely certain, unchangeable truth, and those denouncing the purely formal logic of 'the schools'. But to many of these criticisms the answer is suggested by the author himself, when he complains that critics of the pragmatic formula for truth have only succeeded in misunderstanding it. To take a single instance, Professor Schiller observes that coherence can hardly be regarded as a satisfactory test of truth, since error also may be coherent. This, of course, is quite to fail to grasp the working significance of the criterion in question. Like other critics of the same theory, he not infrequently appeals to it himself. Perhaps the most striking instance of this is his attempt to demonstrate "the self-contradiction of coherence" (pp. 142 f.). And many of the 'Absolutists' whom he attacks with such vehemence would enthusiastically subscribe to his insistence on the progressive character of knowledge.

So far as the constructive side of the work is concerned, the present writer shares the feeling of many other critics, that a serious ambiguity infects it. Indeed, the author is candid enough to admit as much, for he points out that the stock pragmatic formulas of "truth as dependent on consequences", and of truth as that which works, are vague and indefinite when taken by themselves, apart from other criteria (pp. 169 ff.). ". . . the working of truths is really specific in each science,

and relative to its peculiar problems and subject-matter . . . there are still greater differences between science and religion. In the one case the relevant working appeals to the senses, in the other to a perception of spiritual value" (p. 170). Also, "the *value* of the consequences will make a difference. Consequences judged 'good' will support a truth-claim, while those judged 'bad' will conduce to its abandonment. But it is not necessary to *state* that the consequences must be good; since 'good' simply means 'value' and we have also seen that 'truth' means 'logical value'. Nor need we say that the consequences must be 'practical'; for all consequences, even the most 'theoretic', become practical in the end, and affect action" (p. 171). Such admissions are nearly, if not quite enough, *practically* to bridge the gap between Professor Schiller's 'voluntarism' and certain *theoretically* abhorrent intellectualistic doctrines. For although thought is defined, in characteristic instrumentalist terms, as "an abnormality which springs from a disturbance" (p. 195), and although the author pays his respects to those old friends, 'prediction and control', and repeatedly insists on the relativity of 'actual' thinking to living, he nevertheless concedes that "new knowledge transforms the world" in which we live. ". . . reality [*sic*] was not as I imagined, but as I have just discovered" (p. 205). The transforming power of thought is indeed a favorite theme of pragmatism and instrumentalism. But even the leading advocates of these doctrines have never really grasped its profoundly significant implications. Had they done so, they could never have stuck fast in their pragmatism. In other words, their inability to rise above the pragmatic point of view results from their failure to realize that thought is essentially a spiritual and not merely a vital agency.

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Educational Yearbook, 1929, of the International Institute of Teachers College, Columbia University. The Philosophy Underlying National Systems of Education. Edited by I. L. KANDEL. Bureau of Publications, Teachers College, Columbia University, 1930. Pp. xiv, 559.

In this volume are to be found a group of essays on the philosophies underlying education in England, France, Germany, Italy, Japan, and the United States. Each essay is contributed by a citizen—presumably native—of the country under discussion. In each case, the author sets out to trace the roots of the present educational system through the history and the philosophies of his country. Yet, regardless of the differences in the historical and philosophical backgrounds upon which

the several educational structures apparently rest, the fact seems to be that each country is striving to achieve similar ends through education. These ends are, briefly, individual development and social solidarity. To be sure, the aims are differently stated by different authors; they are analyzed more by some than by others or they may be differently emphasized. Several of the authors feel the need of abstracting for special consideration such problems as moral education, self-discipline, the family, the intellect, and others; but fundamentally the essays turn on the questions of individual development and social integration, to be achieved under the conditions peculiar to each country.

It is clear that the presence of a common purpose in education does not necessarily imply uniform procedures and structures in all countries. The history, traditions, and philosophy of each will make for differences. Still, one leaves the volume with the impression that education in all the countries named is concerning itself with the democratic way of life, even in Japan, whose institutions are unknown to most occidentals. Perhaps we should except England, which is taken to task by Sir Michael Sadler and Professor Fred Clarke for its apparent indifference to the problems of education, for its "educational inertia". Yet, in England too a revolutionary change has been slowly fermenting since "the tranquil days of the early eighteenth century". And in this change may be found the key to whatever change has come over English education in the last thirty years.

In the case of both France and the United States educational forces seem to merge and become concentrated in one great fact, which is democracy, even though the histories of the rise of democracy in these two countries are not identical. Germany strives to reach its ends not only by making the German nation and the German citizen its aim, but by definitely emphasizing German culture as a means of education. Italian education seeks to achieve its ends by leading humanity back to the children's school, where direct knoweldge of poetry, works of art, great figures of history, and popular traditions are the materials of study. In Japan "education has been governed by the nation's history and sentiments on the one hand and by the influence of foreign cultures on the other". In that country, each individual in his development "must be animated not by egoism but by a sense of membership in one great national family, or, as it were, by family nationalism, which does not recognize class distinctions". At the head of this family stands the Emperor.

It seems—to the reviewer, at any rate—that in these discussions of the philosophical bases underlying education much is said concerning

the sensitivity of the educational systems to the variety of forces and interests within the state, while perhaps too little attention is given to the influence which education itself might exert upon these very forces and interests themselves. In other words, education is dealt with too little from the idealistic standpoint. This fact, however, should not detract from the value of the *Yearbook* as an enlightening symposium on educational systems and the factors contributing to their origin and development.

FRANK S. FREEMAN

CORNELL UNIVERSITY

Theory of Legislation. An Essay on the Dynamics of Public Mind. By E. JORDAN. Indianapolis, Progress Publishing Company, 1930. Pp. xx, 486.

The title of this book requires a word of explanation. The work is not an empirical study of legislative bodies in action, or of the formation and expression of public opinion, or of the pressure of interested minorities upon the enactment and enforcement of statutes. It is not a study directly of any of the governing agencies by which, in the politician's or lawyer's sense of the word, law is placed upon the statute book or made the rule by which judges apply remedies or penalties in the courts. The book deals rather with what may be called the metaphysics of legislation, legislation being regarded as a property of life itself. Behind the author's theory of legislation there is a metaphysical vitalism which may be described roughly as Aristotelian, or perhaps Hegelian, and which was developed more at length, at least so far as it concerns the nature of human society, in the *Forms of Individuality*, published by Professor Jordan in 1927. In the earlier work the concept of a corporate or embodied social will was defined and explained. In the present work he uses this conception as the foundation of a theory of practice. Taking such a corporate will as an observable reality in our social and political experience, he inquires how it creates and maintains the values which are organs of life as thus embodied.

Accordingly, the distinctive principle of Professor Jordan's theory of legislation is the conception of a spontaneous and self-motivating life which embodies itself for its own ends in societies and in their institutions, and which thus creates the agencies and rules necessary to its proper functions. Consequently he is opposed to all forms of political or juristic theory that regard individual rights or the protection of particular interests as the ends of law or as determining factors in the making or administration of it. Against any form of

sociological jurisprudence, which conceives the law as a means for effectualizing or regulating interests, he argues that interests are intrinsically subjective and therefore incapable of being organized. On the contrary, interests he conceives to be inherently anarchical, the most frequent source of interference with public functions and the cause of their failure. "Nothing will work in the world but the right and the true, and this bears no relation to interest" (p. 384). Perhaps his point of view may be made clear by an illustration, his remarks upon the postal system as an administrative function: "The whole system was conceived in justice and reason in the first place and at its origin, in that the private motive to profit did not intervene, but its motive was clearly formulated as a pure public function." Private interests have operated only to corrupt it, but "its original purpose as rationally conceived was so stamped and engrained in its structure that it has succeeded in maintaining the purity and adequacy of its function as a public agent" (pp. 384 f.).

Now it is clear—and perhaps Professor Jordan would admit—that the history of post offices could hardly be written upon such a working hypothesis. How, for example, would one date the "original purpose as rationally conceived"? Dates aside, did the pressure of private interests operate only as interferences with a public function? In Stuart England the government was likely to regard the post office chiefly as a source of revenue or as a means of espionage, and it was in fact largely the competition of private agencies for carrying mail that finally forced the government to give cheap and efficient service and to abolish the vicious system of "farming". The historian can hardly regard the modernizing of the post office as anything but an incident in the commercial expansion of the later seventeenth century and he will hardly doubt that business-concerns which had an interest in cheap and safe communication were mainly responsible for it. It is true that a public service was thereby created which may serve purposes, both good and bad, not contemplated by its founders. But it certainly surpasses the wit of history to allocate part of the motive to reason and another part to selfish interest.

If such a consideration be offered as an objection to Professor Jordan's argument, he will probably regard it as irrelevant. The issue seems to lie in a fundamentally different notion about methodology in the social sciences. Professor Jordan regards the conception of organic growth as inherently more intelligible than that of rights or interests. He believes that individualism can be shown to be self-contradictory because it is abstract, while the social will can be shown

to be less abstract and therefore more satisfactory. He believes, in short, that it is possible to discuss the intelligibility of categories irrespective of their use in correlating factual data. Finally he believes that there is such a thing as "life's whole of meaning considered as the theoretical ground of practical values".

It is at any rate an excellent consequence of the organic theory that it calls attention to the interdependence of legislative enactment, administration, and the judicial process as all elements in law making. These are conceived by Professor Jordan as different phases or stages of a single corporate act of thought. The legislative in the narrow sense is mainly speculative: it depends indeed upon experience but it cannot be judged by an exclusively factual standard, since it deals in prospect with situations which are in some respects unprecedented. Administration, on the other hand, the author regards as prevailingly experimental, while the judicial process brings speculation and experimentation together in a consistent whole. Thus the law is all of a piece, from its first projection in general form down to its actual incidence upon behavior as a consequence of a court's ruling and the action of an administrative officer.

Professor Jordan's book is a well reasoned presentation of a point of view which is not at present very common. Such a statement always does a service.

GEORGE H. SABINE

CORNELL UNIVERSITY

DESCRIPTIVE NOTICES

Die Geistige Situation der Zeit. Von Karl Jaspers. Berlin and Leipzig, Walter de Gruyter & Co., 1931. Pp. 110.

Dr. Karl Jaspers is Professor of Philosophy at the University of Heidelberg, and in this compact little book of less than two hundred pages we have the response of a man grown in the tradition of transcendental German philosophy to the confused world about him today. After an introduction defining the concept of "Situation" in terms of consciousness and constructive will—academic and verbally formidable—the author moves on to a vigorous review and estimate of contemporary political, sociological, and scientific movements and shibboleths, in the course of which the mechanization of economic life, the sophistry of present-day thought, the confusion and standardization of education, the too narrow empiricism of the social sciences are tersely noted with proper concern and deprecation. The way out of this confusion is a recovery of the self, which has the unity and direction absent in our social world. Max Weber's philosophy of existence, subordinating all explicit knowledge to an inclusive attitude of mind and volitional direction, and introduced by the thought of Schelling, Kierkegaard, Nietzsche, and Anglo-Saxon pragmatism, is the needed discipline. This doctrine is given a rather mystical emphasis. True metaphysics lies in those fundamental decisions which an explicit analysis cannot discover and an explicit presentation only suggests; it involves a return to the self, to the ineffable. Those who bring into their social and economic activities this larger consciousness will form an unrecognized but effective nobility, united by a deep historical sense, regenerative of their time.

It is a well-written book, terse and clear, suffering only occasionally from the transcendental terminology; yet its vigor is a desperate and rather unmeaning optimism which seems only to emphasize the impotence of the traditional method in face of the problems of life and society in Europe today. One by one the actual coöperative activities,—religion, education, industrial organization, political aspiration—are weighed and found wanting; piece by piece the contemporary effort of man is repudiated on account of some lack of comprehensiveness or fault of logic; until we are left to console ourselves with a self that has unity without content, direction without objective. We are left really with a choice between sophistry and academic skepticism. One feels that the author has sacrificed contact with life in his jealousy for a certain intellectual form; for all the activities he criticizes and lays aside are instinct with life and human ambition and are more than

their intellectual forms or theories. Surely philosophy should enter into and expand these actual efforts, rather than berate them.

HUGH MILLER

UNIVERSITY OF CALIFORNIA AT LOS ANGELES

Montaigne. Par FORTUNAT STROWSKI. Deuxième édition, revue et corrigée. Paris, F. Alcan, 1931. Pp. 354.

This monograph, reprinted after an interval of fifteen years, offers a systematic account of the gradual change in Montaigne's thought, from an early period of Stoicism, through one of moderate skepticism, and so to the "dilettantisme" of the final stage. In the course of his discussion, M. Strowski shows how important it is for an understanding of Montaigne's final judgment on life, that the first and second editions of the *Essais* should be read in the light of the information afforded us by the *exemplaire de Bordeaux*.

RALPH W. CHURCH

CORNELL UNIVERSITY

A Crusade for Humanity. By JOHN EDWIN MCGEE. London, Watts and Company, 1931. Pp. x, 249.

The "crusade" which is here briefly described is that undertaken by organized Positivism in England during the last eighty years. Though the writer's prime purpose has been to show the relationship between Positivist policies and the course of English public policy in political, economic, and social affairs, he has deemed it necessary to record the growth of religious and other institutions within individual Positivist groups, to tell of the interrelationships of the groups, and to narrate the life-stories of leading Positivists. His account of the meagre equipment, both in persons and policies, with which English Positivism has worked helps to explain why the "crusade" lacked success.

F. G. MARCHAM

CORNELL UNIVERSITY

Scientific Thought in Poetry. By RALPH B. CRUM. New York, Columbia University Press, 1931. Pp. 246.

In this book Mr. Crum contends "that not all science and poetry are mutually exclusive or even inimical, . . . that poetry has very frequently concerned itself . . . with scientific questions . . . , and that theoretically at least there is no reason why it cannot pass a sane and healthful judgment upon the dictums of the more mature sciences". He concerns himself chiefly with the poets of the last three centuries "in their reactions to the mechanism of Newton and to the concept of metamorphosis and development as these are reflected in Goethe and Darwin". Special attention is given to Voltaire,

Chénier, Erasmus Darwin, Goethe, Tennyson, Meredith, and Davidson. It is a scholarly and illuminating study.

GEORGE E. SMOCK

CORNELL UNIVERSITY

Philosophies of Beauty from Socrates to Robert Bridges. Selected and edited by E. F. CARRITT, with a Foreword by D. W. PRALL. Oxford University Press, 1931. Pp. xxix, 334.

This volume assembles selections from seventy-four authors in a well-printed book of moderate size and moderate price. In many cases an author is represented by selections from several works. It has the merit of bringing together for comparison the basic definitions and principles of many writers on æsthetics. Some of the selections are from volumes not available in ordinary college libraries. The footnotes give numerous cross-references and other references. There is an index which should be extremely useful. The book will be indispensable in connection with college courses in æsthetics; it should be of interest, not only to philosophers and psychologists, but to critics of art, music, and literature.

ALBERT R. CHANDLER

THE OHIO STATE UNIVERSITY

Sociologues d'hier et d'aujourd'hui. Par GEORGES DAVY. Paris, Félix Alcan, 1931. Pp. 308.

This volume contains four previously published studies. The first describes Espinas' biological approach to sociology; the second presents Durkheim's method and study of blood-related groups; the third discusses the relation of McDougall's social psychology to Durkheim's work; the fourth is an account of Lévy-Bruhl's investigation of primitive mentality. M. Davy affirms that sociology has been and still is an essentially French science.

MABEL V. WILSON

We Imperialists. By CARGILL SPRIETSMA. New York, Columbia Press, 1931. Pp. 153.

This book presents in abbreviated form various important passages from the voluminous work of Baron Ernest Seillière, Academician, thus summarizing his philosophy of history. The central doctrine that man is essentially imperialistic is based on social and political theories connected with certain types of mysticism and romanticism, and is shown to be significant in understanding contemporary civilization.

MABEL V. WILSON

Personality and Reason. By ROBERTA CRUTCHER. London, The Favil Press, 1931. Pp. 178.

The problem of personality is presented for the purpose of finding a metaphysical ground for experimental psychology. The author acknowledges her indebtedness to Leibniz, Bergson, and the Personalists. A metaphysical pluralism of active beings, serially arranged in the scale of creative evolution, each with its organizing *entelechy*, is combined with a theory of representative epistemology.

MÉLANIE GUILLEMONT

CORNELL UNIVERSITY

La mentalité primitive. Par L. LÉVY-BRUHL. Oxford, The Clarendon Press, 1931. Pp. 27.

This is the Herbert Spencer Lecture delivered at Oxford in May, 1931. M. Lévy-Bruhl gives a brief exposition of the theory, developed at length in his works, that there exists a type of mind characteristic of uncivilized men and differing, widely though not absolutely, from that of the civilized European. Its chief characteristics are mysticism, or a complete intermingling of the natural and the supernatural, and the substitution of a law of participation for the law of contradiction. This means that for primitive minds it is normal to believe that a person or thing, without losing its identity, can appear in various forms and at different places at the same time.

GEORGE H. SABINE

CORNELL UNIVERSITY

The following books were received during the months of June and July:

An Introduction to Philosophy. By WILHELM JERUSALEM. Translated by CHARLES F. SANDERS. New York, The Macmillan Company, 1932. Pp. xviii, 526.

What is Beauty? By E. F. CARRITT. New York, Oxford University Press, 1932. Pp. 112.

Ethical Relativity. By EDWARD WESTERMARCK. New York, Harcourt, Brace and Company, 1932. Pp. xviii, 302.

Mencius. Translated by LEONARD A. LYALL. New York, Longmans, Green, and Company, 1932. Pp. xxviii, 278.

The Wisdom of Confucius. By MILES MENANDER DAWSON. Boston, The International Pocket Library, 1932. Pp. 64.

The Structure of Insanity. By TRIGANT BURROW. London, Kegan Paul, Trench, Trubner & Co., 1932. Pp. 82.

Philosophers in Hades. By T. V. SMITH. Chicago, University of Chicago Press, 1932. Pp. xviii, 230.

The Open World. By HERMANN WEYL. New Haven, Yale University Press, 1932. Pp. vi, 84.

The Sreegopal Basu Mallick Fellowship Lectures for 1930–31. A Realistic Interpretation of Sankara-Vedanta. By KOKILESWAR SASTRI VIDYARATNA. Calcutta, University of Calcutta, 1931. Pp. viii, 216.

Organic Idealism. By EDWARD ELLIOTT RICHARDSON. Washington, The Society for Philosophical Inquiry, 1932. Pp. 34.

A Philosopher Meets a Novelist. By V. J. MCGILL. Ithaca, The Dragon Press, 1932. Pp. 150.

American Economic Thought in the 17th Century. By E. A. J. JOHNSON. London, P. S. King and Son, 1932. Pp. xii, 290.

An Introductory Logic. By JAMES EDWIN CREIGHTON. Fifth Edition, Revised with the Addition of New Problems and Examples by HAROLD R. SMART. New York, The Macmillan Company, 1932. Pp. xvi, 496.

The Political Philosophy of Confucianism. An Interpretation of the Social and Political Ideas of Confucius, His Forerunners, and His Early Disciples. By LEONARD SHIHLIEN HSÜ. New York, E. P. Dutton & Co., 1932. Pp. xxii, 258.

Six Theories of Mind. By CHARLES W. MORRIS. Chicago, University of Chicago Press, 1932. Pp. xi, 338.

Knowledge and Object. By EDWARD F. TALBOT. Washington, The Catholic University of America, 1932. Pp. 118.

India and America. East and West in Cultural Coöperation. By THE OFFICERS OF THE INDIA ACADEMY OF AMERICA. New York, Kailas Press, 1931. Pp. 14.

Josiah Royce and Indian Thought. By KURT F. LEIDECKER. New York, Kailas Press, 1931. Pp. 32.

India's Outlook on Life. By J. C. CHATTERJI. With an Introduction by John Dewey. New York, Kailas Press, 1931. Pp. 57.

La morale privée. Par O. LEMARIÉ. Paris, Félix Alcan, 1932. Pp. 152.

La philosophie affective. Par JEAN ZAFIROPULO. Paris, Félix Alcan, 1932. Pp. 136.

Histoire de la philosophie. Tome II. La philosophie moderne: Fasc iii, Le xixe siècle, 1800–1850. Par EMILE BRÉHIER. Paris, Félix Alcan, 1932. Pp. 573–912.

Science et philosophie chez Goethe. Par RENÉ BERTHELOT. Paris, Félix Alcan, 1932. Pp. 190.

Réflexions sur la pensée Comtienne. Par JEAN DELVOLVÉ. Paris, Félix Alcan, 1932. Pp. 318.

Les pouvoirs inconnus de l'esprit sur la matière. Par EUGÈNE OSTY et MARCEL OSTY. Paris, Félix Alcan, 1932. Pp. 154.

L'idealisme Kantien. Par PIERRE LACHIÈZE-REY. Paris, Félix Alcan, 1932. Pp. xii, 510.

Les origines Cartésiennes du Dieu de Spinoza. Par PIERRE LACHIÈZE-REY. Paris, Félix Alcan, 1932. Pp. xii, 288.

Lotze et son influence. Par PHILIPPE DEVAUX. Brussels, Maurice Lamertin, 1932. Pp. 48.

Le mythe du héros et la mentalité primitive. Par HENRI BROCHER. Paris, Félix Alcan, 1932. Pp. 126.

Recherches philosophiques. T. I (1931–1932). Par A. KOYRÉ, H.-CH. PUECH, A. SPAIER. Paris, Boivin and Cie., 1932. Pp. vii, 518.

Aristoteles' Schrift "Von der Seele" und ihre Stellung innerhalb der aristotelischen Philosophie. Von HEINRICH CASSIRER. Tübingen, J. C. B. Mohr, 1932. Pp. 200.

Die menschliche Gesellschaft in ihren ethno-soziologischen Grundlagen. Von RICHARD THURNWALD. Berlin, Walter de Gruyter & Co., 1932. Pp. 248.

Schule der Abstraktion und der Dialektik. Neue Wege begrifflichen Denkens. Von LEO JORDAN. München, Ernst Reinhardt, 1932. Pp. 160.

Soziale Seelenhaltungen. Von WILHELM STEINBERG. München, Ernst Reinhardt, 1932. Pp. 152.

Lebensphilosophie und Phänomenologie. Von GEORG MISCH. Berlin, B. G. Teubner, 1932. Pp. x, 324.

Georg Cantor: Gesammelte Abhandlungen. Von ERNST ZERMELO. Berlin, Julius Springer, 1932. Pp. viii, 486.

Von Husserl zu Heidegger. Von JULIUS KRAFT. Leipzig, Hans Buske, 1932. Pp. 124.

Das verhältnis zwischen dem Ethischen und dem Ästhetischen. Von HELMUT THIELICKE. Leipzig, Felix Meiner, 1932. Pp. xvi, 262.

Logik des Widerspruchs. Von ROBERT HEISS. Leipzig, Walter de Gruyter, 1932. Pp. viii, 130.

Hegel, nel centenario della sua morte. Pubblicazione a cura della Facoltà di Filosofia dell' Università Cattolica del Sacro Cruore. Milano, Società Editrice "Vita e Pensiero", 1932. Pp. xiv, 402.

Educazione cattolica. Per MARIO CASOTTI. Brescia, Società Editrice "La Scuola", 1932. Pp. 256.

NICOLAI DE CUSA. *Opera omnia.* Vol. II. Apologia doctae ignorantiae. Edidit RAYMUNDUS KLIBANSKY. Lipsiae, Felix Meiner, 1932. Pp. xii, 50.

NOTES

The Tenth International Congress of Psychology met in Copenhagen, August 22–27, 1932.

Professor Howard D. Roelofs, of Stanford University, has been appointed Head of the Department of Philosophy at the University of Cincinnati, to succeed Professor Guy A. Tawney.

The American Council of Learned Societies offers a limited number of grants to scholars to assist them in carrying on definite projects of research in the humanistic sciences: philosophy; philology, literature, and linguistics; achæology and art; musicology; history, especially all branches of cultural and intellectual history, but exclusive of those branches that are essentially social, economic, and political history.

The grants are of two kinds: (1) Small grants (maximum $300) designed to assist research by scholars who are trained in scientific methods of investigation; (2) larger grants ($500 to $2000) designed to assist in the advancement of knowledge and reserved for mature scholars of substantial achievement in constructive research, who should be able to devote at least six months of uninterrupted work to their investigations. Full information may be obtained from the Secretary for Fellowships and Grants, American Council of Learned Societies, 907 Fifteenth Street, Washington, D. C.

The following is a list of articles in current philosophical periodicals:

PHILOSOPHY, VII, 27: *C. F. D'Arcy*, Theism and Recent Philosophical Speculation; *Ian Gallie*, Oxford Moralists; *J. Johnstone*, Entropy and Evolution; *V. Burdwood Evans*, The Awuinate Proofs of the Existence of God; *James Drever*, The Present Position in Psychology; *E. M. Rowell*, The Size-Factor in Art.

THE JOURNAL OF PHILOSOPHY, XXIX, 10: *D. S. Mackay*, The Displacement of the Sense-Datum; *Carlos Kling*, On the Instrumental Analysis of Thought; *M. Whitcomb Hess*, Epistemology and Symbolism. 11: *George Santayana*, The Prestige of the Infinite; *A. Cornelius Benjamin*, Report of the Thirty-Third Annual Meeting of the Western Division of the American Philosophical Association. 12: *L. Susan Stebbing*, Substances, Events, and Facts; *Marten ten Hoor*, A Critical Analysis of the Concept of Introspection. 13: *Arthur O. Lovejoy*, Dualism Good and Bad (I); *B. A. G. Fuller*, A Spinozistic Fancy. 14: *Evander Bradley McGilvary*, Physics and Metaphysics; *Arthur O. Lovejoy*, Dualisms Good and Bad (II).

THE INTERNATIONAL JOURNAL OF ETHICS, XLII, 4: *Felix S. Cohen*, The Subject Matter of Ethical Science; *D. A. Barker*, Katharsis, An Inquiry; *Herbert M. Morais*, Deism in Revolutionary America (1763–89).

THE SYMPOSIUM, III, 3: *Paul Goodman*, A Rationalistic Architecture; *Younghill Kang*, Swan is Swan, Duck is Duck; *Justin O'Brien*, Vallery Larbaud; *David Burnham*, Two Fragments of a Novel; *Harold Rosenberg*, Character Change and the Drama.

HARVARD THEOLOGICAL REVIEW, XXV, 2: *Kirsopp Lake*, Introduction; *A. Barrois*, The Mines of Sinai; *Silva New*, The Temple of Hathor; *Romain F. Butin*, The Protosinaitic Inscriptions.

THE NEW SCHOLASTICISM, VI, 3: *Marcel De Corte*, Notes Exégetiques sur la Théorie Aristotélicienne; *C. Williamson*, The Universe Around Us.

THE JOURNAL OF RELIGION, XII, 3: *Nicol Macnicol*, The Religious Background of the Indian People; *Paul E. Johnson*, The Illusion of Religion; *Robert C. Stevenson*, The Church and World Peace.

THE HIBBERT JOURNAL, XXX, 4: *Canon Tollinton*, Socrates in Zion; *C. G. Montefiore*, The Old Testament and the Modern Jew; *R. F. Rynd*, The Thirty-nine Articles: A Plea for Restatement; *J. Paul S. R. Gibson*, A Psychological Aspect of the Problem of Reunion; *Ray Knight*, Biblical Mistranslation; *A. Vibert Douglas*, The Spirit of Seeking; *J. L. Stocks*, The Eclipse of Cause; *Helena C. Deneke*, Goethe's Mind and Art; *F. McEachran*, Goethe's Faust and Dante's Divine Comedy; *G. N. Clark*, War and the War Spirit; *F. S. Marvin*, Science and Industrial Sanity; *Hugh P. Vowles* and *Margaret Vowles*, Science and Industrial Sanity.

THE AUSTRALIAN JOURNAL OF PSYCHOLOGY AND PHILOSOPHY, X, 2: *John Anderson*, The Place of Hegel in the History of Philosophy; *W. A. Merrylees*, An Examination of Psychological Hedonism; *Richard J. F. Boyer*, The Ethical Basis of Trade Relations; *H. Gibson*, Education: *John Donald MacLean*, Science and Religion; *Frank Colyer*, A New Non-Polarizing A. C. Psycho-Galvanometer.

THE BRITISH JOURNAL OF PSYCHOLOGY, XXII, 4: *O. A. Oeser*, Some Experiments on the Abstraction of Form and Colour. Part II—Rorschach Tests; *F. Aveling*, The Influence of Volition upon Thinking; *Richard A. C. Oliver*, The Musical Talent of Natives of East Africa; *Henri Piéron*, Theoretical and Practical Aspects of Intelligence; *J. O. Irwin*, On the Uniqueness of the Factor *g* for General Intelligence; *J. C. Maxwell Garnett*, Further Notes on the Single General Factor in Mental Measurements.

THE AMERICAN JOURNAL OF PSYCHOLOGY, XLIV, 3: *Mary Elizabeth Bulbrook*, An Experimental Inquiry into the Existence and Nature of 'Insight'; *H. G. Wyatt*, Free Word Association and Sex Difference; *F. Theodore Perkins*, Symmetry in Visual Recall; *Marjorie E. Shaw*, A Comparison of Individuals and Small Groups in the Rational Solution of

Complex Problems; *Samuel W. Fernberger* and *Francis W. Irwin*, Time Relations for the Different Categories of Judgment in the 'Absolute Method' in Psychophysics; *Leland W. Crafts*, Whole and Part Methods with Visual Spatial Material: *Elizabeth Duffy*, The Relation between Muscular Tension and Quality of Performance; *Edward S. Robinson* and *Florence R. Robinson*, Practice and the Work Decrement; *W. A. Bousfield* and *M. Sherif*, Hunger as a Factor in Learning; *Sidney M. Newhall*, The Control of Eyelid Movements in Visual Experiments; *D. F. Showalter*, A Variable-Pattern Paper Maze.

PSYCHOLOGICAL REVIEW, XXXIX, 3: *Orvis C. Irwin*, The Organismic Hypothesis and Differentiation of Behavior. II. The Reflex Arc Concept; *Carl M. White*, The Categories of Substance, Cause and Function in Freud's Psychology; *John H. McFadden*, The Will-O'-The-Wisp "Intelligence"; *Louis Granich*, An Analysis of Motivation; *Herbert Woodrow*, Quotidian Variability; *F. M. Gregg*, Materializing the Ghost of Köhler's Gestalt Psychology; *J. Stanley Gray*, A Behavioristic Interpretation of Intelligence; *William M. Lepley*, A Theory of Serial Learning and Forgetting Based Upon Conditioned Reflex Principles; *Discussion: Lester S. King*, Discussion of "The Adrenal Cortex and Emotion". 4: *H. M. Johnson*, Some Follies of 'Emancipated' Psychology; *R. C. Tryon*, Multiple Factors *vs.* Two Factors as Determiners of Abilities; *John A. McGeoch*, Forgetting and the Law of Disuse; *D. McL. Pury*, On Chromatic and Achromatic Colors; *Orvis C. Irwin*, The Organismic Hypothesis and Differentiation of Behavior. III, The Differentiation of Human Behavior.

JOURNAL OF EXPERIMENTAL PSYCHOLOGY, XV, 3: *C. W. Telford* and *B. O'D. Anderson*, The Normal Wink Reflex: Its Facilitation and Inhibition; *G. L. Freeman*, Compensatory Reinforcements of Muscular Tension Subsequent to Sleep Loss; *L. L. Thurstone*, Stimulus Dispersions in the Method of Constant Stimuli; *Clyde A. Lynch*, The Memory Values of Certain Alleged Emotionally Toned Words; *Rex L. Hoke*, Factors Conditioning Efficiency in a Motor Skill; *Frederick H. Lumley*, Anticipation as a Factor in Serial and Maze Learning; *Norman L. Munn*, Bilateral Transfer of Learning; *F. Stuart Chapin*, A Single Ratio Product Formula for Correlation by the Short-Cut Method.

PSYCHOLOGICAL BULLETIN, XXIX, 5: *D. D. Droba*, Methods for Measuring Attitudes; *Arthur Jenness*, The Recognition of Facial Expressions of Emotion. 6: Proceedings of the Twenty-Seventh Annual Meeting of the Southern Society for Philosophy and Psychology.

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